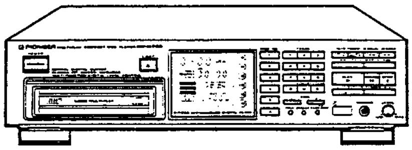
PIONEER
The future of sound and vision.

Service Manual



ORDER NO.
ARP1551

MULTI-PLAY COMPACT DISC PLAYER

PD-M700
PD-M600

MODELS PD-M700 AND PD-M600 HAVE SEVEN VERSIONS :

Type	Applicable model		Power requirement	Export destination
	PD-M700	PD-M600		
KU	–	○	AC120V only	U.S.A
KU/CA	○	–	AC120V only	U.S.A and Canada
KC	–	○	AC120V only	Canada
HEM	○	–	AC220V,240V (switchable) *	European continent
HB	○	–	AC220V,240V (switchable) *	United kingdom
SD	○	○	AC110V,120 – 127V,220V,240V (switchable)	Kingdom of Saudi Arabia and General market
SD/G	–	○	AC110V,120 – 127V,220V,240V (switchable)	U.S.Military

* Change the connection of the primary lead wire of the Transformer board assembly.

- **This service manual is applicable to the PD-M700/KU/CA, HEM, HB, PD-M600/KU and KC types.**
- **For the PD-M700/HEM and HB types, please refer to page 70.**
- **For the PD-M600/KU and KC types, please refer to page 72.**
- **For the PD-M700/SD type, refer to additional service manual.**
- **For the PD-M600/SD and SD/G types, refer to additional service manual.**
- **Ce manuel pour le service comprend les explications en français de réglage.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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1. SAFETY INFORMATION

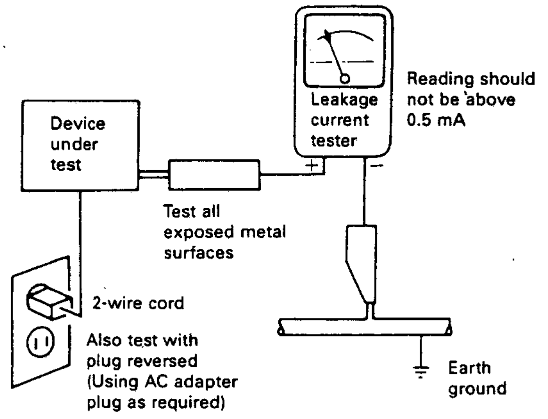
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120 V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Reading should not be above 0.5 mA
Leakage current tester
Device under test
+
−
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

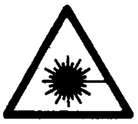
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VAROITUS!

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASÄTEILYÄ LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVAN 1. MUKAINEN VAROITUSMERKKI.



LASER
Kuva 1
Lasersateilyn varoitusmerkki

ADVERSEL:

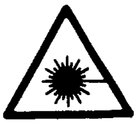
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VIKTIGT

APPARATEN INNEHÅLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

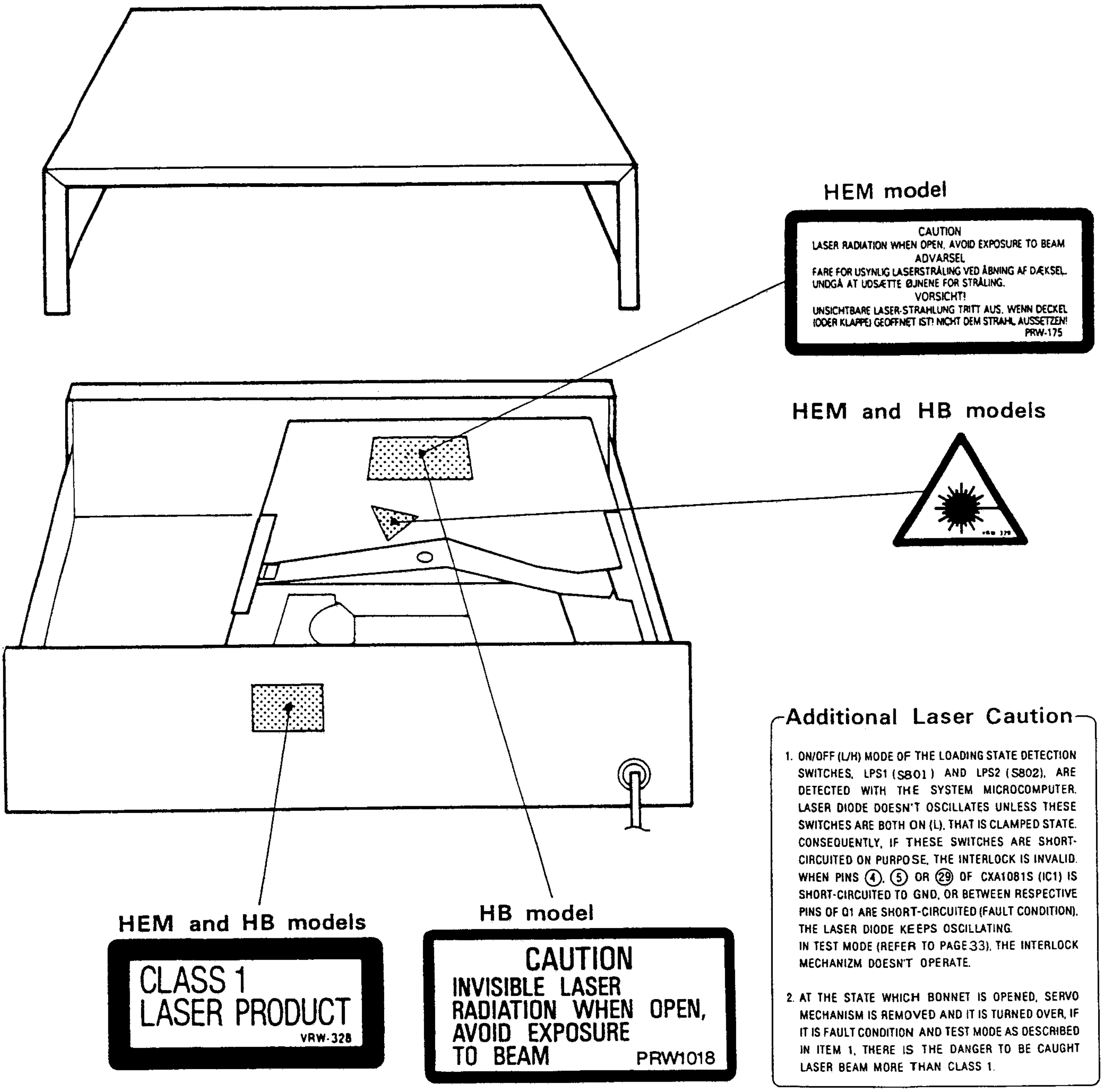


LASER
Picture 1
Warning sign for laser radiation

IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LABEL CHECK



HEM model

CAUTION
LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM
ADVARSEL
FARE FOR USYNLIG LASERSTRÅLING VED ÅBNING AF DÆKSEL.
UNDGÅ AT UDSÆTTE ØJNENE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL
(ODER KLAPPE) GEOFFNET IST! NICHT DEM STRAHL AUSSETZEN!
PRW-175

HEM and HB models

HEM and HB models

CLASS 1
LASER PRODUCT
VRW-328

HB model

CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM
PRW1018

Additional Laser Caution

1. ON/OFF (L/H) MODE OF THE LOADING STATE DETECTION SWITCHES, LPS1 (S801) AND LPS2 (S802), ARE DETECTED WITH THE SYSTEM MICROCOMPUTER. LASER DIODE DOESN'T OSCILLATES UNLESS THESE SWITCHES ARE BOTH ON (L), THAT IS CLAMPED STATE. CONSEQUENTLY, IF THESE SWITCHES ARE SHORT-CIRCUITED ON PURPOSE, THE INTERLOCK IS INVALID. WHEN PINS ④, ⑤ OR ㉙ OF CXA1081S (IC1) IS SHORT-CIRCUITED TO GND, OR BETWEEN RESPECTIVE PINS OF Q1 ARE SHORT-CIRCUITED (FAULT CONDITION), THE LASER DIODE KEEPS OSCILLATING.
   IN TEST MODE (REFER TO PAGE 33), THE INTERLOCK MECHANIZM DOESN'T OPERATE.

2. AT THE STATE WHICH BONNET IS OPENED, SERVO MECHANISM IS REMOVED AND IT IS TURNED OVER, IF IT IS FAULT CONDITION AND TEST MODE AS DESCRIBED IN ITEM 1, THERE IS THE DANGER TO BE CAUGHT LASER BEAM MORE THAN CLASS 1.

2. EXPLODED VIEWS AND PARTS LIST

NOTES :

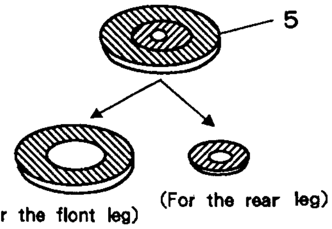
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

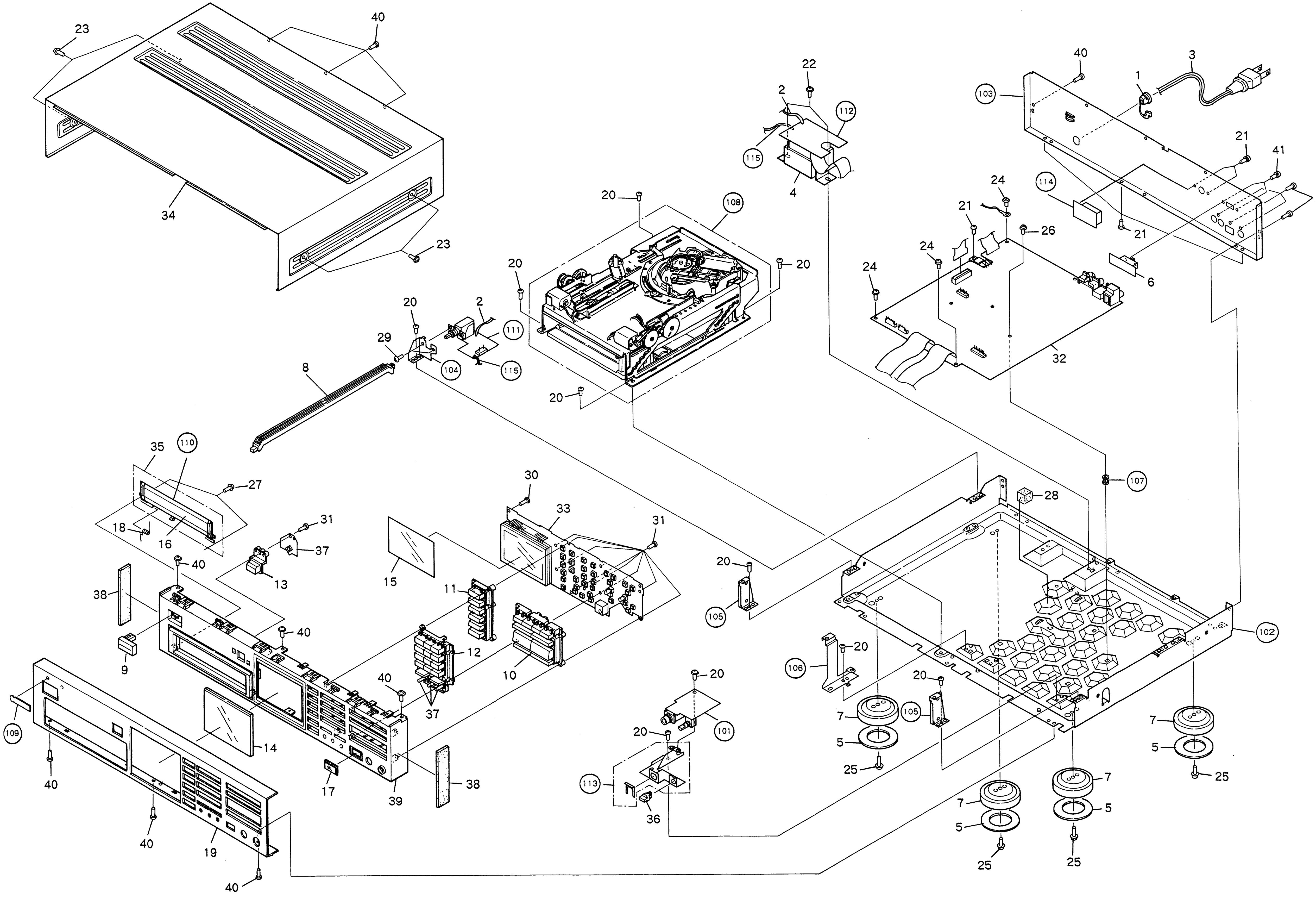
2.1 EXTERIOR

Parts List

Mark	No.	Part No.	Description
⚠	1	CM-22C	Strain relief
	2	PDF1035	Lead wire unit
⚠	3	PDG1002 (PDG1015)	AC power cord
⚠ ★	4	PTT1079	Power transformer (AC120V)
	5	PNM1018	Skid *
◉	6	PWZ1388	D-OUT SW board assembly
	7	PNW1327	Leg (B)
	8	PNW1272	SW joint
	9	PAC1215	Power button
	10	PAD1034	Function button unit
	11	PAC1270	Disc button
	12	PAC1218	Track button
	13	PAC1216	Eject button
	14	PAM1193	Window
	15	PAM1144	FL filter
	16	PAM1191	Door name plate
	17	PNW1075	Sensor window
	18	PBH-456	Door spring
	19	PAN1096	Front panel
	20	BBZ30P060FCC	Screw
	21	BBZ26P060FCC	Screw
	22	BBZ40P060FCC	Screw
	23	FBT40P080FZK	Screw
	24	IBZ30P060FCC	Screw
	25	IBZ30P120FCC	Screw
	26	IBZ30P150FCU	Screw
	27	IPZ30P060FMC	Screw
	28	PNM1059	Cushion
	29	PMZ30P060FCU	Screw
	30	PPZ30P080FMC	Screw
	31	PPZ30P150FMC	Screw
⚠ ◉	32	PWZ1382	Main board assembly
◉	33	PWZ1386	Function board assembly
	34	PYY1058	Bonnet
	35	PYY1066	Door assembly
	36	PAC1208	Knob (PHONES LEVEL)
	37	PAA1002	Mode cap
	38	PEB1050	Side rubber
	39	PNW1363	Function panel
	40	BBZ30P080FCC	Screw
	41	PMA26P040FCU	Screw
	101		Headphone board assembly
	102		Base
	103		Rear panel
	104		SW angle
	105		Angle
	106		Center angle
	107		P.C.B spacer
	108		Multi machanism assembly
	109		Name plate
	110		Door
⚠	111		Power switch board assembly
	112		Transformer board assembly
	113		Headphone angle
	114		Subcode board assembly
	115		Lead wire unit

*The skid consist of the big ring part and the small ring part.
If you stick the skid to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.

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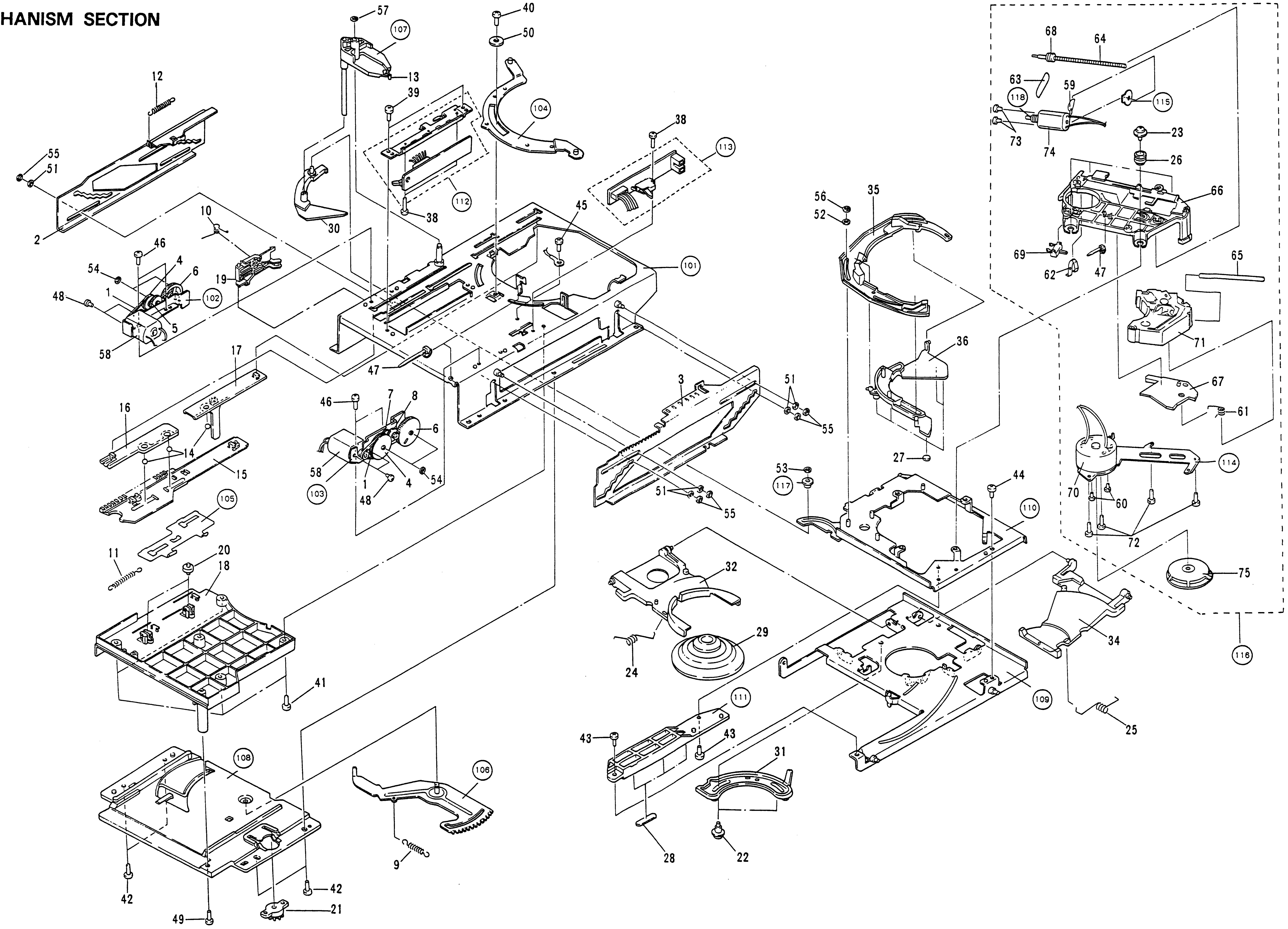
2.2 MECHANISM SECTION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Parts List of Mechanism Section

Mark	No.	Part No.	Description
★★	1	PEB1015	Belt
	2	PNB1028	Stair (L)
	3	PNB1138	Stair (R)
	4	PNW1095	Gear pulley
	5	PNW1096	Gear
	6	PNW1097	Gear
	7	PNW1122	Gear
	8	PNW1098	Idoler gear
	9	PBH-465	Eject spring
	10	PBH1014	Lock spring
	11	PBH1015	SM spring
	12	PBH1018	Stair spring
	13	PBK1009	Drive spring
	14	PBP-001	Steel ball 4 φ
	15	PNW1099	Rack
	16	PNW1253	Drive plate
	17	PNW1101	Operation plate
	18	PNW1102	Top guide
	19	PNW1395 (PNW1403)	Lock lever
	20	PNY-386	Roller
	21	PXC-016	Damper assembly
	22	PBA-125	Screw
	23	PBA1002	Screw
	24	PBH1016	Clamper spring (T)
	25	PBH1017	Clamper spring (B)
	26	PEB1014	Float rubber
	27	PED1001	Cushion (A)
	28	PED1002	Cushion (B)
	29	PNW1068	Clamper
	30	PNW1105	Rotary lever
	31	PNW1106	Clamper cam
	32	PNW1107	Clamper holder (T)
	33		• • • • •
	34	PNW1108	Clamper holder (B)
	35	PNW1110	Pressure cam
	36	PNW1111	Upper tray
	37		• • • • •
	38	BBZ20P080FMC	Screw
	39	BBZ30P060FCC	Screw
	40	BBZ30P060FMC	Screw
	41	BBZ30P060FMC	Screw
	42	BBZ30P060FMC	Screw
	43	BBZ30P060FMC	Screw
	44	BBZ30P060FMC	Screw
	45	BBZ30P060FMC	Screw
	46	PCZ30P040FMC	Screw
	47	PEC-107	Binder
	48	PMZ20P030FMC	Screw
	49	PPZ30P080FMC	Screw

Mark	No.	Part No.	Description
	50	WA30F120M100	Washer
	51	WA31D054D050	Washer
	52	WA31D054D050	Washer
	53	WT12D032D025	Washer
	54	WT25D047D025	Washer
	55	WT25D047D025	Washer
	56	WT25D047D025	Washer
	57	WT31D054D025	Washer
★★	58	PYY1025	Motor assembly (LOADING, DISC SELECT)
	59	CGDYX104M25	Ceramic capacitor
	60	PBA-209	Screw
	61	PBH1008	Drive spring
	62	PBK1010	Spring
★★	63	PEB1072	Belt
	64	PLA1003	Drive screw
	65	PLA1004	Guide bar
	66	PNW1062	Chassis
	67	PNW1063	Carriage plate
	68	PNW1066	Pully
★★	69	PSH1003	Slide switch (INSIDE,S101)
★★	70	PXM1001	Spindle motor
	71	PWY1007	Pick up assembly
	72	BPZ20P080FZK	Screw
	73	PMZ20P030FMC	Screw
★★	74	PYY1025	Motor assembly (CARRIAGE)
	75	PYY1027	Disc table assembly
	76	PXM1002	Motor
	101		Main chassis
	102		Gear angle (L)
	103		Gear angle (R)
	104		Lever
	105		SM select
	106		Eject lever
	107		Drive lever
	108		Bottom guide
	109		Sub chassis
	110		Upper chassis
	111		Upper guide
	112		Switch board assembly
	113		Select board assembly
	114		Base plate
	115		Carriage motor board
	116		Servo mechanism assembly
	117		Roller
	118		Pully

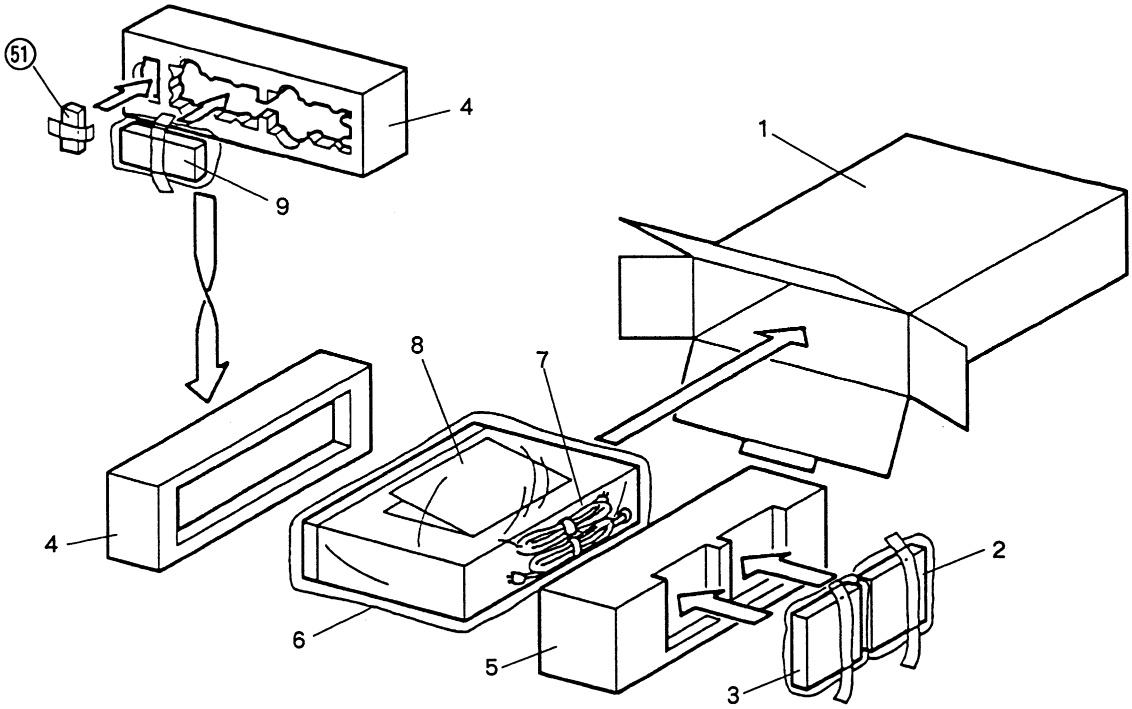
Parts List of Mechanism Section

Mark	No.	Part No.	Description
★★	1	PEB1015	Belt
	2	PNB1028	Stair (L)
	3	PNB1138	Stair (R)
	4	PNW1095	Gear pulley
	5	PNW1096	Gear
	6	PNW1097	Gear
	7	PNW1122	Gear
	8	PNW1098	Idoler gear
	9	PBH-465	Eject spring
	10	PBH1014	Lock spring
	11	PBH1015	SM spring
	12	PBH1018	Stair spring
	13	PBK1009	Drive spring
	14	PBP-001	Steel ball 4 ϕ
	15	PNW1099	Rack
	16	PNW1253	Drive plate
	17	PNW1101	Operation plate
	18	PNW1102	Top guide
	19	PNW1395 (PNW1403)	Lock lever
	20	PNY-386	Roller
	21	PXC-016	Damper assembly
	22	PBA-125	Screw
	23	PBA1002	Screw
	24	PBH1016	Clamper spring (T)
	25	PBH1017	Clamper spring (B)
	26	PEB1014	Float rubber
	27	PED1001	Cushion (A)
	28	PED1002	Cushion (B)
	29	PNW1068	Clamper
	30	PNW1105	Rotary lever
	31	PNW1106	Clamper cam
	32	PNW1107	Clamper holder (T)
	33		• • • • •
	34	PNW1108	Clamper holder (B)
	35	PNW1110	Pressure cam
	36	PNW1111	Upper tray
	37		• • • • •
	38	BBZ20P080FMC	Screw
	39	BBZ30P060FCC	Screw
	40	BBZ30P060FMC	Screw
	41	BBZ30P060FMC	Screw
	42	BBZ30P060FMC	Screw
	43	BBZ30P060FMC	Screw
	44	BBZ30P060FMC	Screw
	45	BBZ30P060FMC	Screw
	46	PCZ30P040FMC	Screw
	47	PEC-107	Binder
	48	PMZ20P030FMC	Screw
	49	PPZ30P080FMC	Screw
	50	WA30F120M100	Washer
	51	WA31D054D050	Washer
	52	WA31D054D050	Washer
	53	WT12D032D025	Washer
	54	WT25D047D025	Washer
	55	WT25D047D025	Washer
	56	WT25D047D025	Washer
	57	WT31D054D025	Washer
★★	58	PYY1025	Motor assembly (LOADING, DISC SELECT)
	59	CGDYX104M25	Ceramic capacitor
	60	PBA-209	Screw
	61	PBH1008	Drive spring
	62	PBK1010	Spring
★★	63	PEB1072	Belt
	64	PLA1003	Drive screw
	65	PLA1004	Guide bar
	66	PNW1062	Chassis
	67	PNW1063	Carriage plate
	68	PNW1066	Pully
★★	69	PSH1003	Slide switch (INSIDE,S101)
★★	70	PXM1001	Spindle motor
	71	PWY1007	Pick up assembly
	72	BPZ20P080FZK	Screw
	73	PMZ20P030FMC	Screw
★★	74	PYY1025	Motor assembly (CARRIAGE)
	75	PYY1027	Disc table assembly
	76	PXM1002	Motor
	101		Main chassis
	102		Gear angle (L)
	103		Gear angle (R)
	104		Lever
	105		SM select
	106		Eject lever
	107		Drive lever
	108		Bottom guide
	109		Sub chassis
	110		Upper chassis
	111		Upper guide
	112		Switch board assembly
	113		Select board assembly
	114		Base plate
	115		Carriage motor board
	116		Servo mechanism assembly
	117		Roller
	118		Pully

3. PACKING

Parts List of Packing

Mark	No.	Part No.	Description
	1	PHG1029	CD Packing case
	2	PXA1102	Magazine assembly
	3	PXA1043	Single magazine assembly
	4	PHA1061	Protector (F)
	5	PHA1062	Protector (R)
	6	Z23-007	Mat Sheet
	7	PDE1001 (PDE1002)	Connection cord with pin plug
	8	PRB1043	Operating instructions (English)
	9	PWW1015	Remote control unit
	51		Battery (UM-4)



4. ELECTRICAL PARTS LIST

NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5 %, and K = 10 %).

560 Ω → 56×10^1 → 561 ········ RD1/4PS$\boxed{5}\boxed{6}\boxed{1}$J
47k Ω → 47×10^3 → 473 ········ RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
0.5 Ω → 0R5 ········ RN2H$\boxed{0}\boxed{R}\boxed{5}$K
1 Ω → 010 ········ RS1P$\boxed{0}\boxed{1}\boxed{0}$K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562×10^1 → 5621 ········ RN1/4SR$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F

Miscellaneous Parts

P.C.BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⚠ ◉	Main board assembly	PWZ1382
	Headphone board assembly	
⚠	Power switch board assembly	
	Transformer board assembly	
◉	Function board assembly	PWZ1386
	Switch board assembly	
◉	D-OUT SW board assembly	PWZ1388
	Select board assembly	
	Subcode board assembly	

OTHERS

Mark	Symbol & Description	Part No.
⚠	Strain relief	CM-22C
⚠	AC power cord	PDG1002 (PDG1015)
⚠★	Power transformer	PTT1079
	Pick-up assembly	PWY1007
★★	Spindle motor	PXM1001
★★	Motor assembly (DISC SELECT, DISC LOADING, CARRIAGE)	PYY1025
★★	S101 Slide switch (INSIDE)	PSH1003

⚠ Power Switch Board Assembly

SWITCH

Mark	Symbol & Description	Part No.
⚠★★	S401 Power switch (POWER)	PSA-009

CAPACITOR

Mark	Symbol & Description	Part No.
⚠	C401 (0.01μF/AC400V)	PCG-009

◉ Function Board Assembly (PWZ1386)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC201	PDG010A
★★	Q201 – Q203	2SC1740S
★★	Q204 – Q206	DTA124ES
★	D201	SLH-56MC3H-S
★	D202	SLH-56YC3H-S

SWITCHES

Mark	Symbol & Description	Part No.
★★	S201 – S235 Tact switch (MEMORY, CLEAR TRACK NO.(0 – 9), DISC NO(1 – 6), STOP, PAUSE, PLAY, TRACK SEARCH, AUTO FADER, MANUAL SEARCH, DELETE, RANDOM, TIME, REPEAT, TIME FADE, DIGITAL LEVEL)	PSG-064

COILS

Mark	Symbol & Description	Part No.
	L201,L202 Axial inductor	LAU010K

CAPACITORS

Mark	Symbol & Description	Part No.
	C201,C202	CCPUSL300J50
	C204	CEAS330M16
	C203	CKCYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	V201 Fluorescent indicator tube	PEL1023
★	X201	RSS-035
	Ceramic resonator (4.194MHz)	
	Remote sensor	GP1U52

⚠◉ Main Board Assembly (PWZ1382)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC1	CXA1081S
★★	IC2	CXA1082AS
★★	IC3	CXD1135QZ
★★	IC4	CXK5816PN-12L (CXK5816PN-15L) (LH5116-15)
⚠★★	IC30 – IC32	ICP-N10
★★	IC10	M51957AL
★★	IC24,IC25	NJM5532DD
★★	IC19	NJM78L05A
★★	IC21	NJM78M05FA
★★	IC13	NJM78M12FA
⚠★★	IC11	NJM7805FA
★★	IC22	NJM79M05FA
★★	IC14	NJM79M12FA
⚠★★	IC12	NJM7905FA
★★	IC7,IC8	PCM56P-J
★★	IC27	PD0026A
★★	IC6	PD3118A
★★	IC16 – IC18	TA8410K
★★	IC20	TC74HCU04P
★★	IC29	YM3414
★★	Q6,Q10,Q11,Q20 – Q23	DTA124ES
★★	Q12,Q19,Q24	DTC124ES
★★	Q1	2SA1399
★★	Q7,Q18	2SA933S
★★	Q5,Q8,Q9,Q16,Q17	2SC1740S
★★	Q13,Q14	2SD1302
★★	Q28,Q29	2SK364
★★	Q26,Q27	2SJ104
★	D11	MTZ27B (MTZ27C)
★	D12	MTZ5.1B (MTZ5.1C)
⚠ ★	D25	2W02-5008-L
★	D1 – D4,D10	1SR139-100
★	D13 – D16	1SS254

SWITCH

Mark	Symbol & Description	Part No.
★★	S1 Tact switch (TEST MODE)	PSG-064

COILS

Mark	Symbol & Description	Part No.
	L2,L3 Axial inductor (1mH)	LAU010K
	L1 Pulse transformer	PTL1003

CAPACITORS

Mark	Symbol & Description	Part No.
	C95	CCCCH070D50
	C96,C151	CCCCH100D50
	C2 – C4	CCCCH300J50
	C156	CCCSL101J50
	C116	CCCSL221J50
	C60,C61,C97	CCCCH330J50
	C40	CEANP4R7M25
	C16,C22	CEASR47M50
	C85	CEAS010M50
	C10,C43	CEAS101M10
	C88	CEAS101M50
	C108,C109	CEAS102M16
	C106,C107	CEAS102M25
	C102,C103	CEAS222M16
	C104,C105	CEAS222M25
	C48	CEAS3R3M50
	C5,C7,C12,C15,C19,C20,C23,C26, C38,C41,C42,C50,C52 – C57, C62,C79,C80 – C82,C117, C123 – C130,C152,C155,C158	CEAS330M16
	C100,C101	CEAS332M25
	C34	CEAS4R7M50
	C89,C90,C93,C94	CEAS470M50
	C86,C115,C132,C133,C153, C154,C157	CKCYF103Z50
	C131,C159,C160	CKCYF473Z50
	C30,C51	CQMA102J50
	C14,C17,C46	CQMA103K50
	C31,C32,C35,C39	CQMA104K50
	C29	CQMA272J50
	C13	CQMA332J50
	C77,C78	CQMA153J50
	C11,C21,C28,C37	CQMA333K50
	C1,C27,C47	CQMA472J50
	C67,C68	CQMA683J50
	C121,C122	CQSF102J50
	C59 (0.47F/5.5V)	PCH1062
	C73,C74	CQMA562J50
	C75,C76	CQMA821J50
	C175,C176	CKDYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
★	VR2 Semi-fixed (10kΩ)	VRTB6VS103
★	VR3 – VR7 Semi-fixed (22kΩ)	VRTB6VS223
★	VR8 Semi-fixed (1kΩ)	VRTS6VS102
★	VR9,VR10 Semi-fixed (100kΩ)	VRTB6VS104
	R145 Resistor array	RA4S473J
	R30	RN1/6PQ3601F
	Other resistors	RD1/6PM□□□J

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J50
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Z50
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⚠◉ Main Board Assembly (PWZ1382)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC1	CXA1081S
★★	IC2	CXA1082AS
★★	IC3	CXD1135QZ
★★	IC4	CXK5816PN-12L (CXK5816PN-15L) (LH5116-15)
⚠★★	IC30 – IC32	ICP-N10
★★	IC10	M51957AL
★★	IC24,IC25	NJM5532DD
★★	IC19	NJM78L05A
★★	IC21	NJM78M05FA
★★	IC13	NJM78M12FA
⚠★★	IC11	NJM7805FA
★★	IC22	NJM79M05FA
★★	IC14	NJM79M12FA
⚠★★	IC12	NJM7905FA
★★	IC7,IC8	PCM56P-J
★★	IC27	PD0026A
★★	IC6	PD3118A
★★	IC16 – IC18	TA8410K
★★	IC20	TC74HCU04P
★★	IC29	YM3414
★★	Q6,Q10,Q11,Q20 – Q23	DTA124ES
★★	Q12,Q19,Q24	DTC124ES
★★	Q1	2SA1399
★★	Q7,Q18	2SA933S
★★	Q5,Q8,Q9,Q16,Q17	2SC1740S
★★	Q13,Q14	2SD1302
★★	Q28,Q29	2SK364
★★	Q26,Q27	2SJ104
★	D11	MTZ27B (MTZ27C)
★	D12	MTZ5.1B (MTZ5.1C)
⚠ ★	D25	2W02-5008-L
★	D1 – D4,D10	1SR139-100
★	D13 – D16	1SS254

SWITCH

Mark	Symbol & Description	Part No.
★★	S1 Tact switch (TEST MODE)	PSG-064

COILS

Mark	Symbol & Description	Part No.
	L2,L3 Axial inductor (1mH)	LAU010K
	L1 Pulse transformer	PTL1003

CAPACITORS

Mark	Symbol & Description	Part No.
	C95	CCCCH070D50
	C96,C151	CCCCH100D50
	C2 – C4	CCCCH300J50
	C156	CCCSL101J50
	C116	CCCSL221J50
	C60,C61,C97	CCCCH330J50
	C40	CEANP4R7M25
	C16,C22	CEASR47M50
	C85	CEAS010M50
	C10,C43	CEAS101M10
	C88	CEAS101M50
	C108,C109	CEAS102M16
	C106,C107	CEAS102M25
	C102,C103	CEAS222M16
	C104,C105	CEAS222M25
	C48	CEAS3R3M50
	C5,C7,C12,C15,C19,C20,C23,C26, C38,C41,C42,C50,C52 – C57, C62,C79,C80 – C82,C117, C123 – C130,C152,C155,C158	CEAS330M16
	C100,C101	CEAS332M25
	C34	CEAS4R7M50
	C89,C90,C93,C94	CEAS470M50
	C86,C115,C132,C133,C153, C154,C157	CKCYF103Z50
	C131,C159,C160	CKCYF473Z50
	C30,C51	CQMA102J50
	C14,C17,C46	CQMA103K50
	C31,C32,C35,C39	CQMA104K50
	C29	CQMA272J50
	C13	CQMA332J50
	C77,C78	CQMA153J50
	C11,C21,C28,C37	CQMA333K50
	C1,C27,C47	CQMA472J50
	C67,C68	CQMA683J50
	C121,C122	CQSF102J50
	C59 (0.47F/5.5V)	PCH1062
	C73,C74	CQMA562J50
	C75,C76	CQMA821J50
	C175,C176	CKDYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
★	VR2 Semi-fixed (10kΩ)	VRTB6VS103
★	VR3 – VR7 Semi-fixed (22kΩ)	VRTB6VS223
★	VR8 Semi-fixed (1kΩ)	VRTS6VS102
★	VR9,VR10 Semi-fixed (100kΩ)	VRTB6VS104
	R145 Resistor array	RA4S473J
	R30	RN1/6PQ3601F
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA5 1P Pin jack (DIGITAL OUT)	PKB1004
	JA1 2P Pin jack (OUTPUT)	PKB1011
	JA6 Optical digital output terminal	TOTX172
★	X3 Crystal resonator (16.9344MHz)	PSS1001
★	X1 Ceramic resonator (4.00MHz)	VSS-018
	DL1,DL2 Delay line (200nsec)	PTF1012 (PTF1009)

Headphone Board Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	IC501	M5218L

COILS

Mark	Symbol & Description	Part No.
	L501,L502 Axial inductor	LAU010K
	L503 Radial inductor	LRAR22M

CAPACITORS

Mark	Symbol & Description	Part No.
	C501,C502	CEAS330M16
	C503 – C505	CKCYF103Z50
	C506,C507	CQMA104K50
	C508	CKCYF473Z50

RESISTORS

Mark	Symbol & Description	Part No.
★	VR501 Variable resistor (20kΩ) (PHONES LEVEL)	PCS1001
	R501 – R510	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA501 Headphone jack (PHONES)	PKN1001

Transformer Board Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C301 – C310	CKCYF103Z50

Switch Board Assembly

SWITCHES

Mark	Symbol & Description	Part No.
★★	S701 – S704 Slide switch (LOADING POSITION, MAGAZINE)	PSH1004

◉D-OUT SW Board Assembly (PWZ1388)

SWITCH

Mark	Symbol & Description	Part No.
★★	S901 Slide switch (DIGITAL OUT)	PSH1007

Select Board Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	Q601	GP1A52HR

SWITCH

Mark	Symbol & Description	Part No.
★★	S601 Slide switch (MODE)	PSH1005

CAPACITOR

Mark	Symbol & Description	Part No.
	C601	CEAL100M16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

Subcode Board Assembly

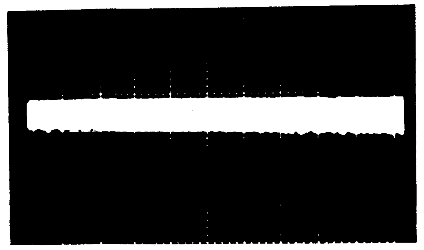
OTHERS

Mark	Symbol & Description	Part No.
	JA701 Socket (SUBCODE)	PKP1002 (PKP-038)

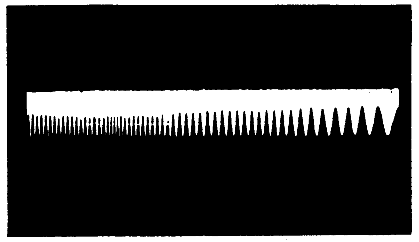
WAVEFORMS

NOTE: The encircled numbers denote measuring points in the schematic diagram.

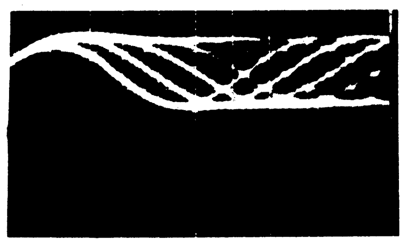
① CN11-5 Pin : PLAY
100mV/div 5m sec/div



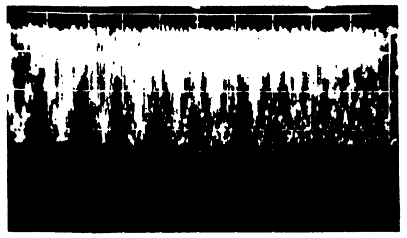
① CN11-5 Pin : SEARCH
100mV/div 5m sec/div



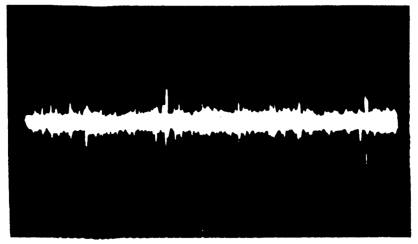
② TP1-1 Pin : PLAY
1V/div 200n sec/div



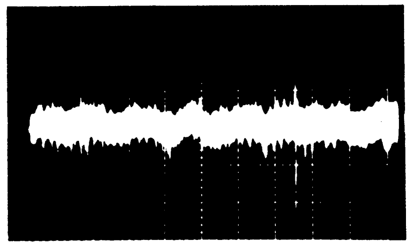
② TP1-1 Pin : SEARCH
500mV/div 5m sec/div



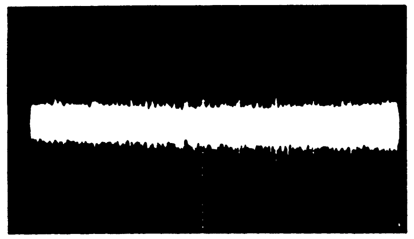
③ TP1-6 Pin : PLAY
500mV/div 10m sec/div



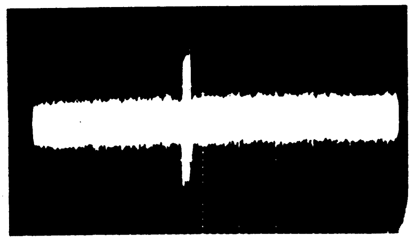
③ TP1-6 Pin : SEARCH
500mV/div 10m sec/div



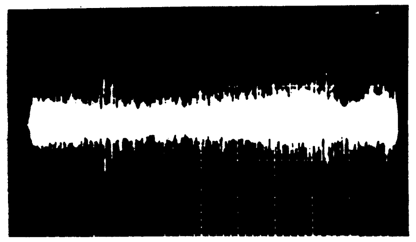
④ TP1-2 Pin : PLAY
1V/div 10m sec/div



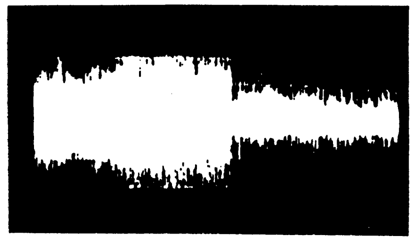
④ TP1-2 Pin : SEARCH
1V/div 10m sec/div



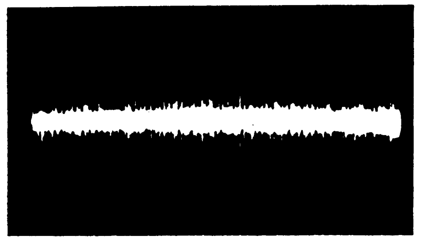
⑤ IC18-1 : PLAY
0.2V/div 10m sec/div



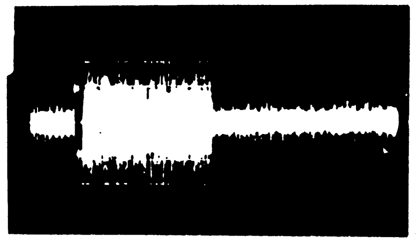
⑤ IC18-1 : SEARCH
0.2V/div 10m sec/div



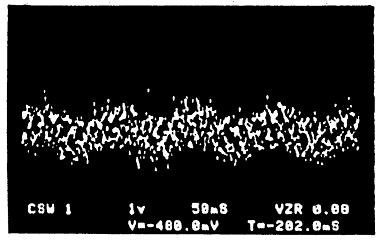
⑥ IC18-9 : PLAY
0.2V/div 10m sec/div



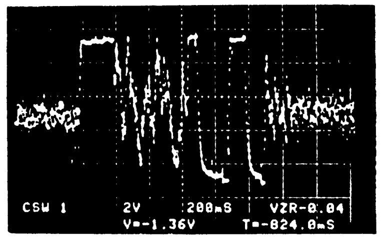
⑥ IC18-9 : SEARCH
0.2V/div 10m sec/div



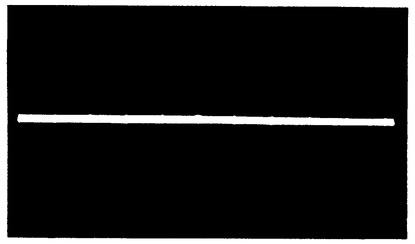
⑦ IC17-1 : PLAY
1V/div 50m sec/div



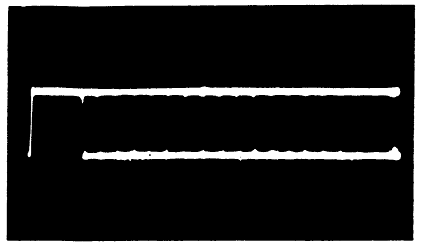
⑦ IC17-1 : SEARCH
2V/div 100m sec/div



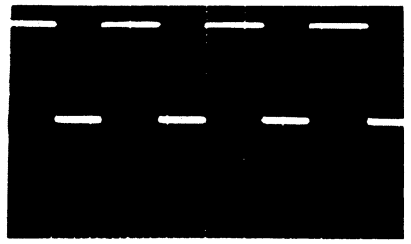
⑧ IC2,33,34 Pin : PLAY
2V/div 10m sec/div



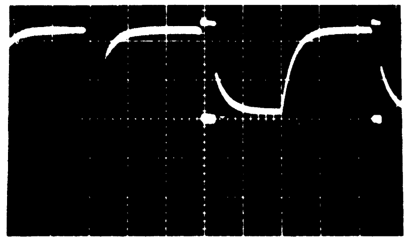
⑨ IC1 27 Pin : PLAY
2V/div 500μ sec/div



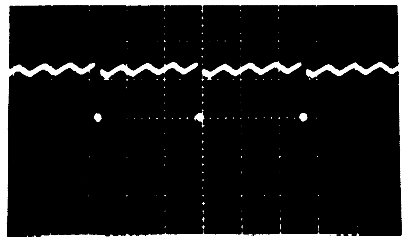
⑩ IC3-4 : PLAY
2V/div 50μ sec/div



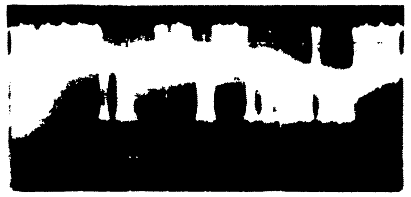
⑩ IC3-4 : SEARCH
2V/div 100m sec/div



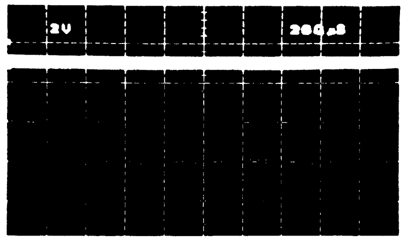
⑪ IC3-3 : PLAY
2V/div 200μ sec/div



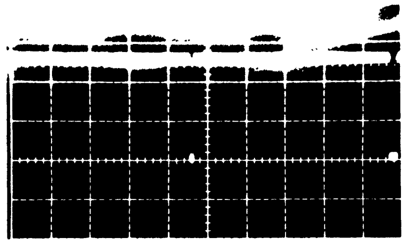
⑪ IC3-3 : SEARCH
2V/div 10m sec/div



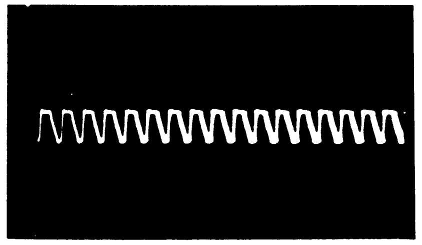
⑫ TP2-1 : PLAY
2V/div 200μ sec/div



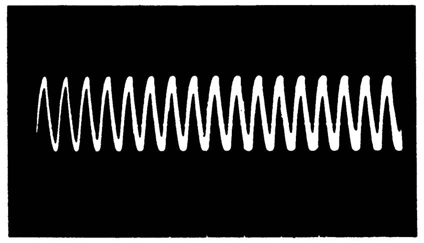
⑫ TP2-1 : SEARCH
2V/div 20m sec/div



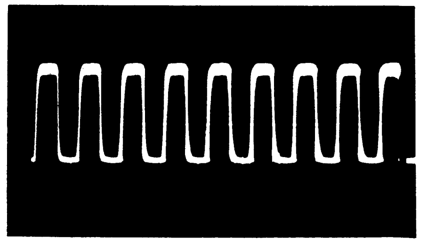
⑬ IC2-38 : PLAY
2V/div 200n sec/div



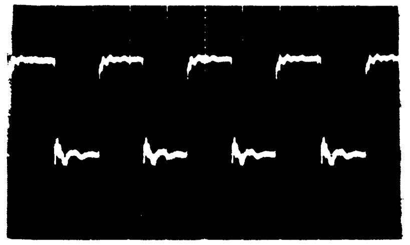
⑭ IC3-8 : PLAY
2V/div 200n sec/div



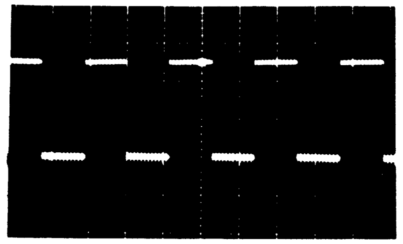
⑮ TP2-2 : PLAY
2V/div 200n sec/div



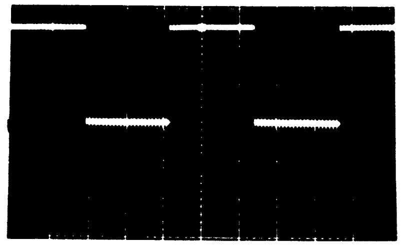
⑯ IC3-76 : STOP
2V/div 200n sec/div



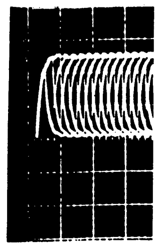
⑰ IC3-79 : STOP
2V/div 5μ sec/div



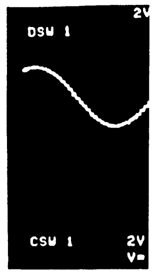
⑱ IC3-80 : STOP
2V/div 5μ sec/div



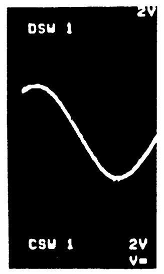
⑲ IC29-12 : PL
2V/div



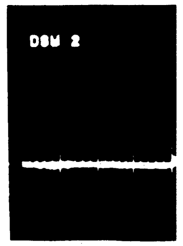
⑳ IC8-9 : PLAY
2V/div



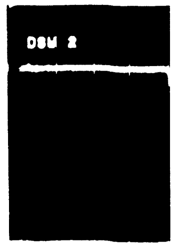
㉑ OUTPUT Lch
2V/div



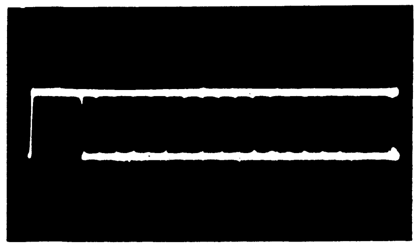
㉒ IC10-5 : POV
2V/div



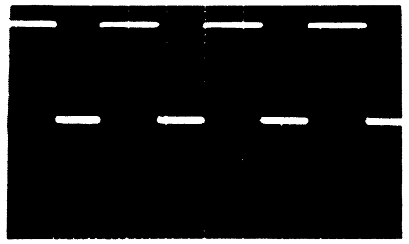
㉒ IC10-5 : POV
2V/div



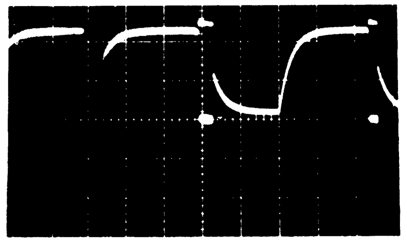
⑨IC1 27 Pin : PLAY
2V/div 500µ sec/div



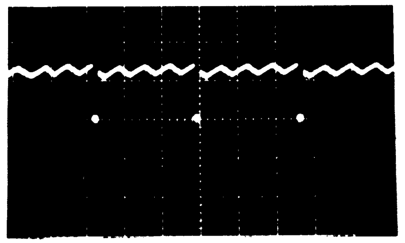
⑩IC3-4 : PLAY
2V/div 50µ sec/div



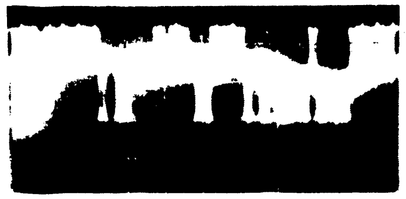
⑩IC3-4 : SEARCH
2V/div 100m sec/div



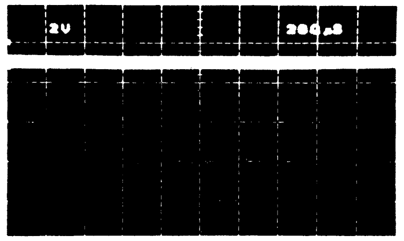
⑪IC3-3 : PLAY
2V/div 200µ sec/div



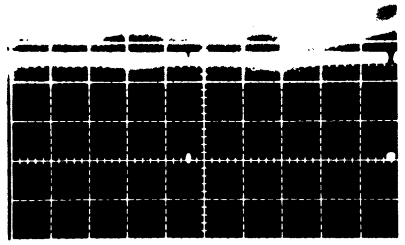
⑪IC3-3 : SEARCH
2V/div 10m sec/div



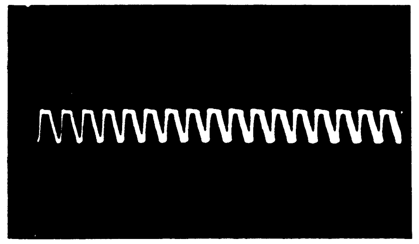
⑫TP2-1 : PLAY
2V/div 200µ sec/div



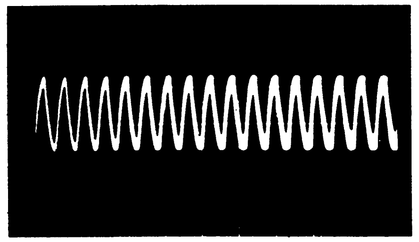
⑫TP2-1 : SEARCH
2V/div 20m sec/div



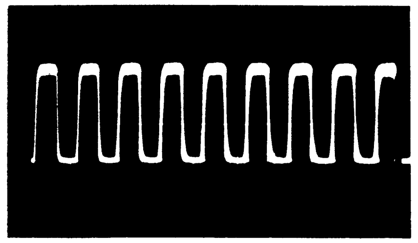
⑬IC2-38 : PLAY
2V/div 200n sec/div



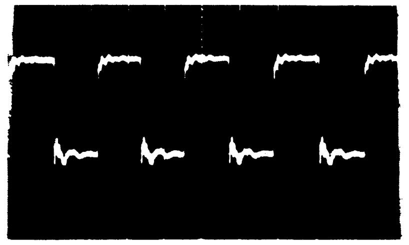
⑭IC3-8 : PLAY
2V/div 200n sec/div



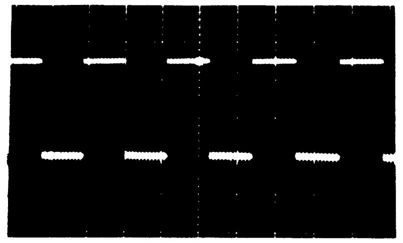
⑮TP2-2 : PLAY
2V/div 200n sec/div



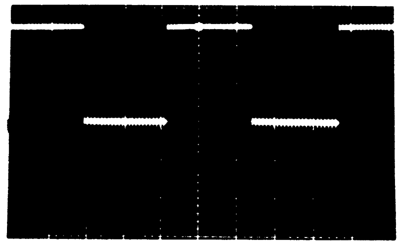
⑯IC3-76 : STOP
2V/div 200n sec/div



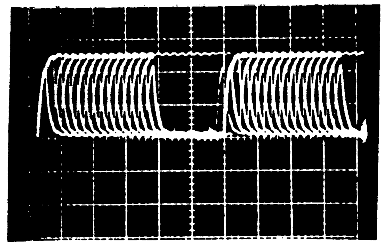
⑰IC3-79 : STOP
2V/div 5µ sec/div



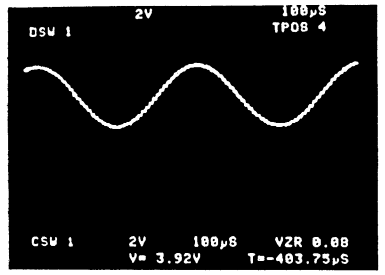
⑱IC3-80 : STOP
2V/div 5µ sec/div



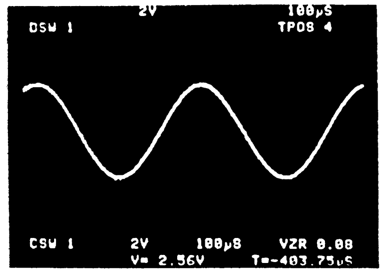
⑲IC29-12 : PLAY
2V/div 1µ sec/div



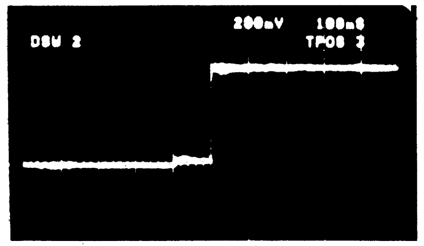
⑳IC8-9 : PLAY
2V/div 100µ sec/div



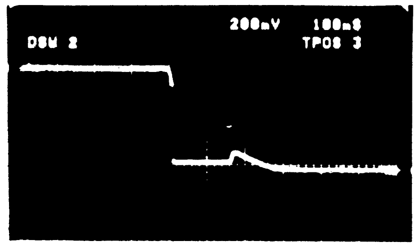
㉑OUTPUT Lch : PLAY
2V/div 100µ sec/div



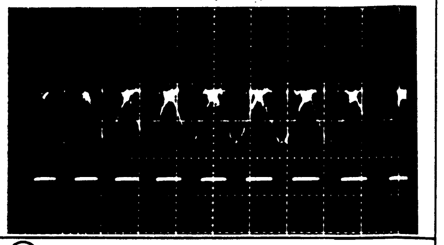
㉒IC10-5 : POWER ON
2V/div 100m sec/div



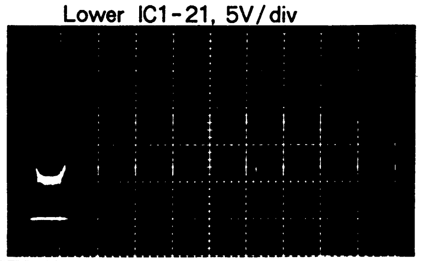
㉒IC10-5 : POWER OFF
2V/div 100m sec/div



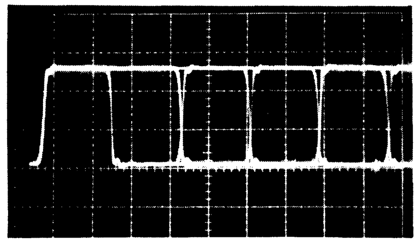
㉓IC1-22 : TR OPEN
1m sec/div
Upper TP1-1, 1V/div
Lower IC1-22, 2V/div



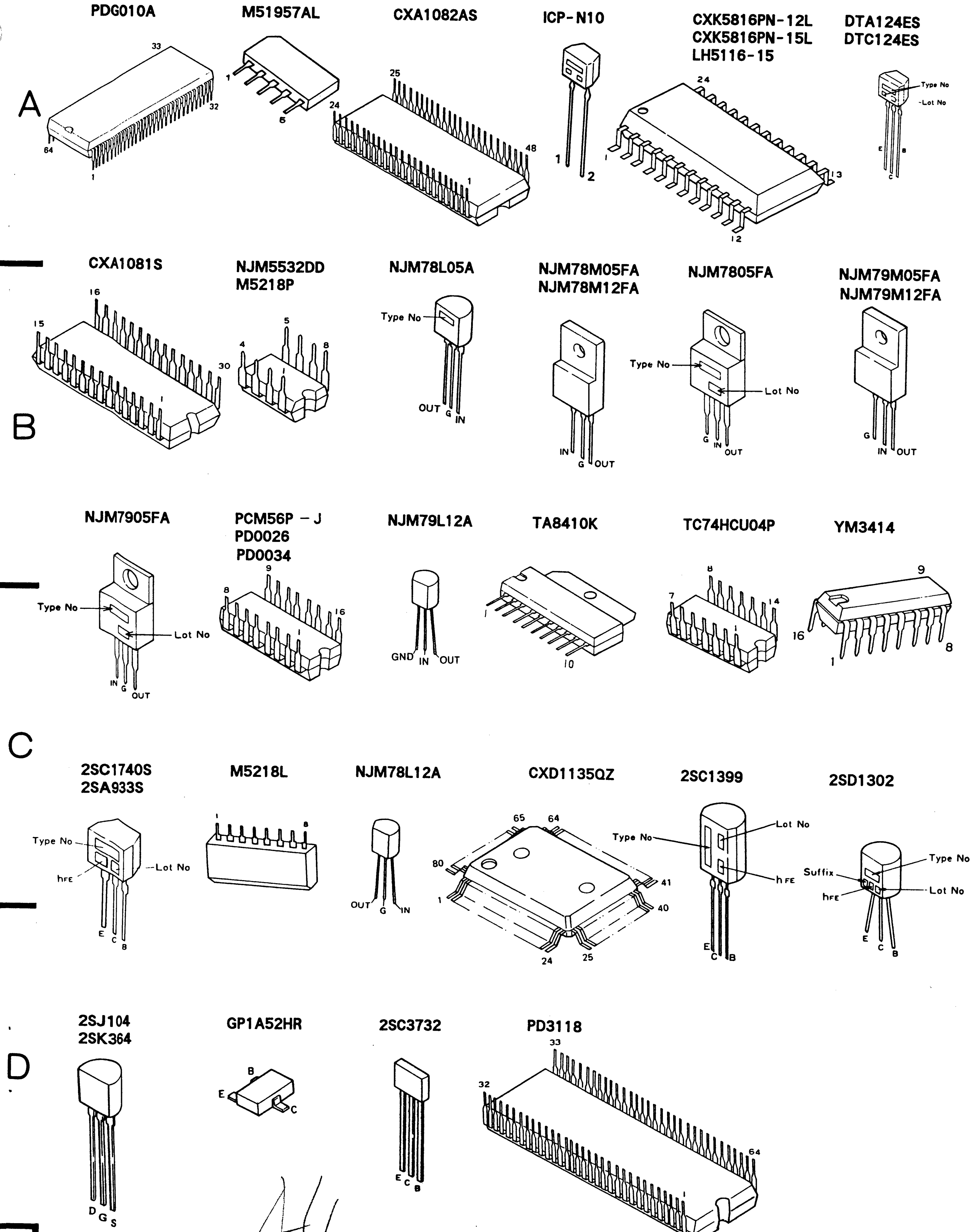
㉔IC1-21 : DFCT
1m sec/div
Upper TP1-1, 1V/div
Lower IC1-21, 5V/div



㉕IC20-2 : DOTX
2V/div 50n sec/div



External appearance of transistors and ICs.


A
PDG010A
33
32
64
1
M51957AL
1
6
CXA1082AS
25
24
48
1
ICP-N10
1
2
CXK5816PN-12L
CXK5816PN-15L
LH5116-15
24
1
13
12
DTA124ES
DTC124ES
Type No
Lot No
E
B
C
B
CXA1081S
16
15
30
1
NJM5532DD
M5218P
5
4
8
1
NJM78L05A
Type No
OUT
G
IN
NJM78M05FA
NJM78M12FA
IN
G
OUT
NJM7805FA
Type No
Lot No
G
IN
OUT
NJM79M05FA
NJM79M12FA
G
IN
OUT
NJM7905FA
Type No
Lot No
IN
G
OUT
PCM56P－J
PD0026
PD0034
9
8
16
1
NJM79L12A
GND
IN
OUT
TA8410K
1
10
TC74HCU04P
8
7
14
1
YM3414
9
16
1
8
C
2SC1740S
2SA933S
Type No
Lot No
hFE
E
C
B
M5218L
1
8
NJM78L12A
OUT
G
IN
CXD1135QZ
65
64
80
41
1
40
24
25
2SC1399
Type No
Lot No
hFE
E
C
B
2SD1302
Type No
Suffix
Lot No
hFE
E
C
B
D
2SJ104
2SK364
D
G
S
GP1A52HR
B
E
C
2SC3732
E
C
B
PD3118
33
32
64
1

5. SCHEMATIC DIAGRAM

1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
   ▭ ; DC voltage (V) at no input signal.

4. OTHERS :
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements, in design.

5. SWITCHES : (The underlined indicates the switch position)

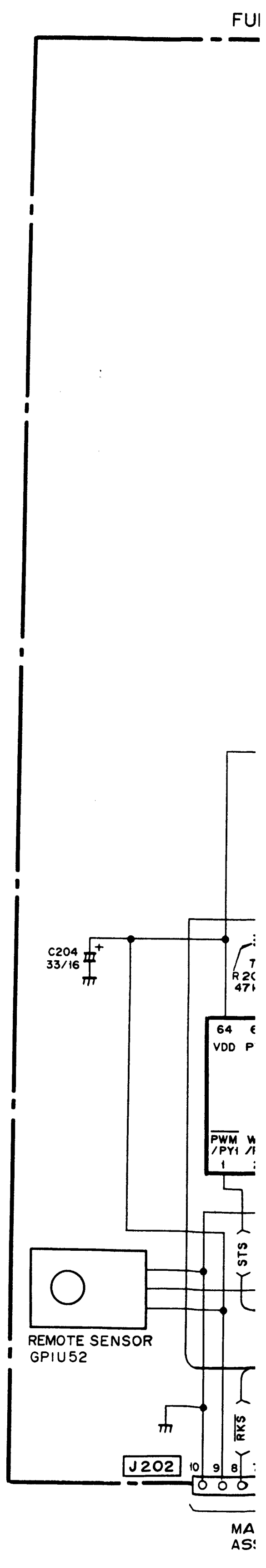
OUTSIDE OF P.C.BOARD ASSEMBLY
S101 : INSIDE ON － OFF
MAIN BOARD ASSEMBLY
S1 : TEST MODE ON － OFF
FUNCTION BOARD ASSEMBLY
S201 : 1 DISC NO.
S202 : 1
S203 : 2 TRACK NO.
S204 : 3
S205 : EJECT
S206 : AUTO FADER (╱‾ IN)
S207 : TRACK SEARCH (⏮)
S208 : MANUAL SEARCH (◀◀)
S209 : 2 DISC NO.
S210 : 4
S211 : 5 TRACK NO.
S212 : 6
S213 : REPEAT
S214 : AUTO FADER (‾╲ OUT)
S215 : TRACK SEARCH (⏭)
S216 : MANUAL SEARCH (▶▶)
S217 : 3 DISC NO.
S218 : 7
S219 : 8 TRACK NO.
S220 : 9
S221 : DIGITAL LEVEL (－)
S222 : PLAY (▶)
S223 : PAUSE (❚❚)
S224 : STOP (■)
S225 : 4 DISC NO.
S226 : 0 TRACK NO.
S227 : MEMORY
S228 : CLEAR
S229 : DIGITAL LEVEL (＋)
S230 : TIME FADE
S231 : DELETE－
S232 : RANDOM
S233 : 5 DISC NO.
S234 : 6 DISC NO.
S235 : TIME

D－OUT SW BOARD ASSEMBLY
S901 : POWER ON － OFF
SELECT BOARD ASSEMBLY
S601 : MODE
SWITCH BOARD ASSEMBLY
S701 : LPS1 LOADING POSITION
S702 : LPS2

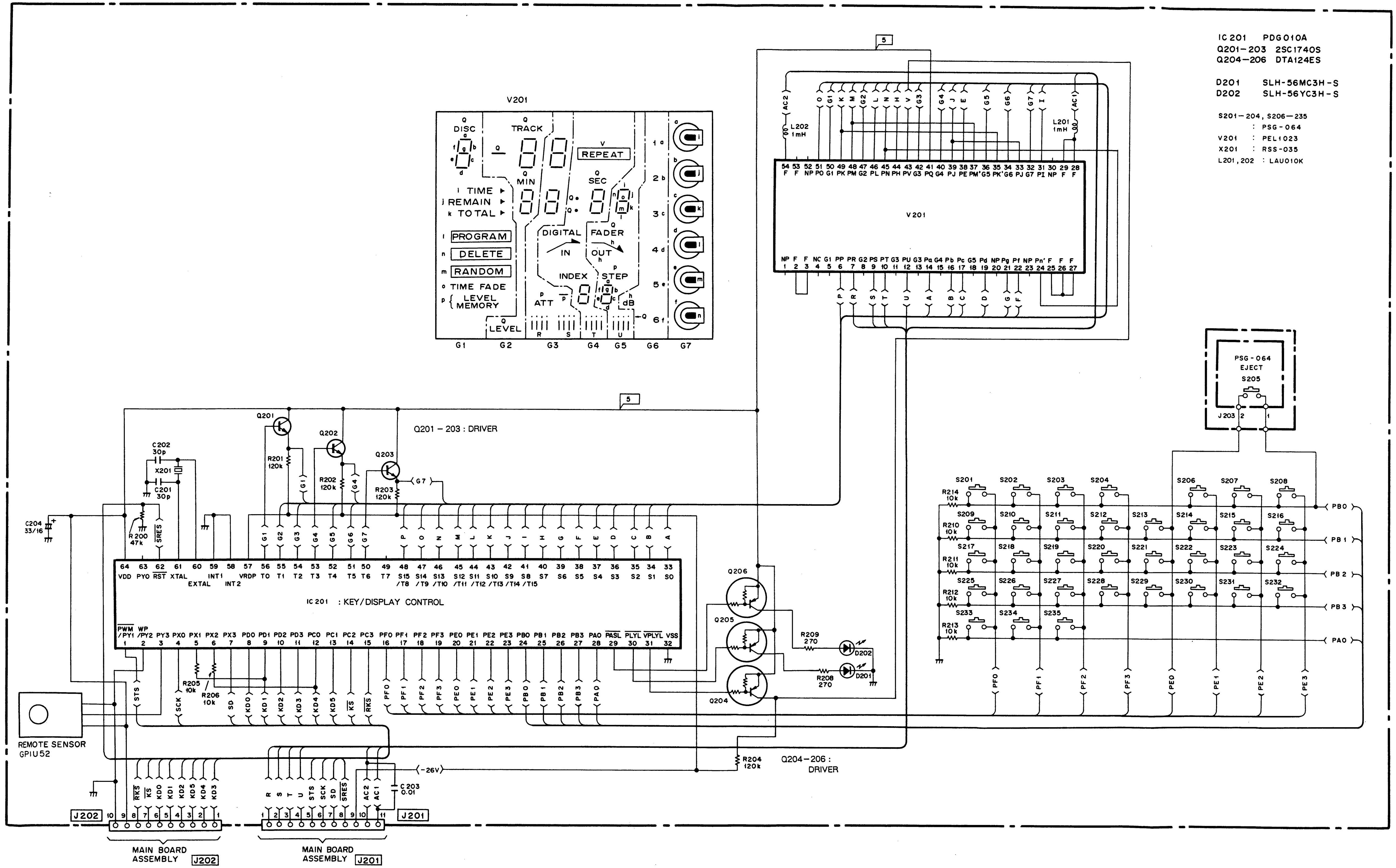
	STOP	DURING THE LOADING	CLAMP CONDITION PLAY	DURING THE EJECT
S701	ON (H)	OFF (L)	OFF (L)	ON (H)
S702	ON (H)	ON (H)	OFF (L)	OFF (L)

S703 : MZS2 MAGAZINE
S704 : MZS1

	NO MAGAZINE	SIX MAGAZINES	SINGLE
S703	ON (H)	OFF (L)	OFF (L)
S704	OFF (L)	ON (H)	OFF (L)


C204
33/16
64
VDD
PWM
/PY1
1
STS
RKS
REMOTE SENSOR
GP1U52
J202
10
9
8

FUNCTION BOARD ASSEMBLY PWZ1386

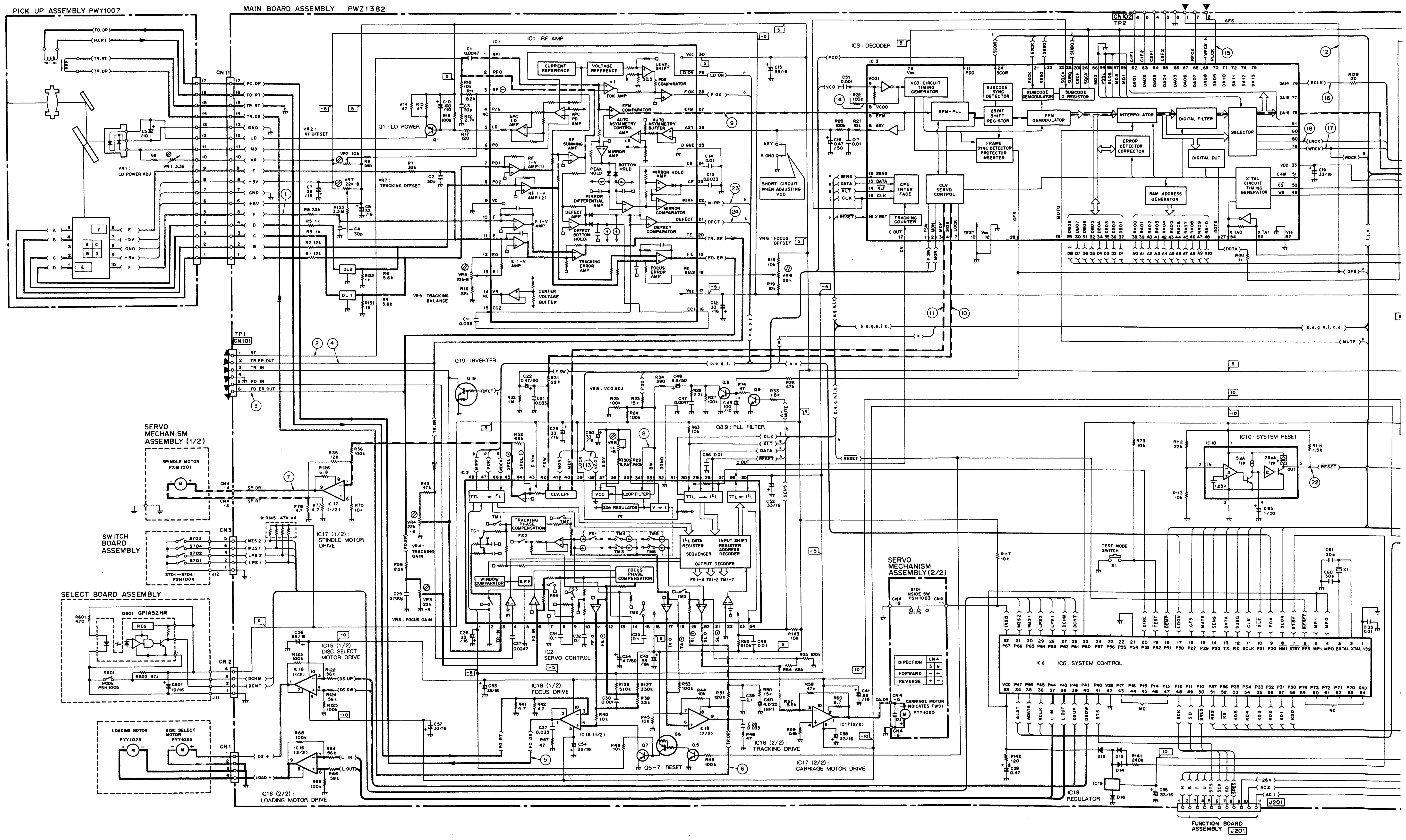

V201
DISC
TRACK
REPEAT
MIN
SEC
TIME
REMAIN
TOTAL
PROGRAM
DELETE
RANDOM
TIME FADE
LEVEL MEMORY
DIGITAL
IN
FADER
OUT
INDEX
STEP
ATT
dB
LEVEL
G1 G2 G3 G4 G5 G6 G7
L202 1mH
L201 1mH
Q201
Q202
Q203
Q201 − 203 : DRIVER
R201 120k
R202 120k
R203 120k
C202 30p
X201
C201 30p
C204 33/16
R200 47k
IC201 : KEY/DISPLAY CONTROL
VDD PY0 RST XTAL EXTAL INT1 INT2 VRDP T0 T1 T2 T3 T4 T5 T6 T7
S15/T8 S14/T9 S13/T10 S12/T11 S11/T12 S10/T13 S9/T14 S8/T15 S7 S6 S5 S4 S3 S2 S1 S0
PWM/PY1 WP/PY2 PY3 PX0 PX1 PX2 PX3 PD0 PD1 PD2 PD3 PC0 PC1 PC2 PC3 PF0 PF1 PF2 PF3 PE0 PE1 PE2 PE3 PB0 PB1 PB2 PB3 PA0 PASL PLYL VPLYL VSS
R205 10k
R206 10k
Q204
Q205
Q206
R209 270
R208 270
D202
D201
R204 120k
Q204−206 : DRIVER
PSG-064
EJECT
S205
J203
S201 S202 S203 S204 S206 S207 S208
S209 S210 S211 S212 S213 S214 S215 S216
S217 S218 S219 S220 S221 S222 S223 S224
S225 S226 S227 S228 S229 S230 S231 S232
S233 S234 S235
R214 10k
R210 10k
R211 10k
R212 10k
R213 10k
PB0 PB1 PB2 PB3 PA0
PF0 PF1 PF2 PF3 PE0 PE1 PE2 PE3
REMOTE SENSOR GP1U52
−26V
C203 0.01
RKS KS KD0 KD1 KD2 KD5 KD4 KD3
R S T U STS SCK SD SRES AC2 AC1
J202
J201
MAIN BOARD ASSEMBLY J202
MAIN BOARD ASSEMBLY J201
A
B
C
D

IC201 PDG010A
Q201−203 2SC1740S
Q204−206 DTA124ES

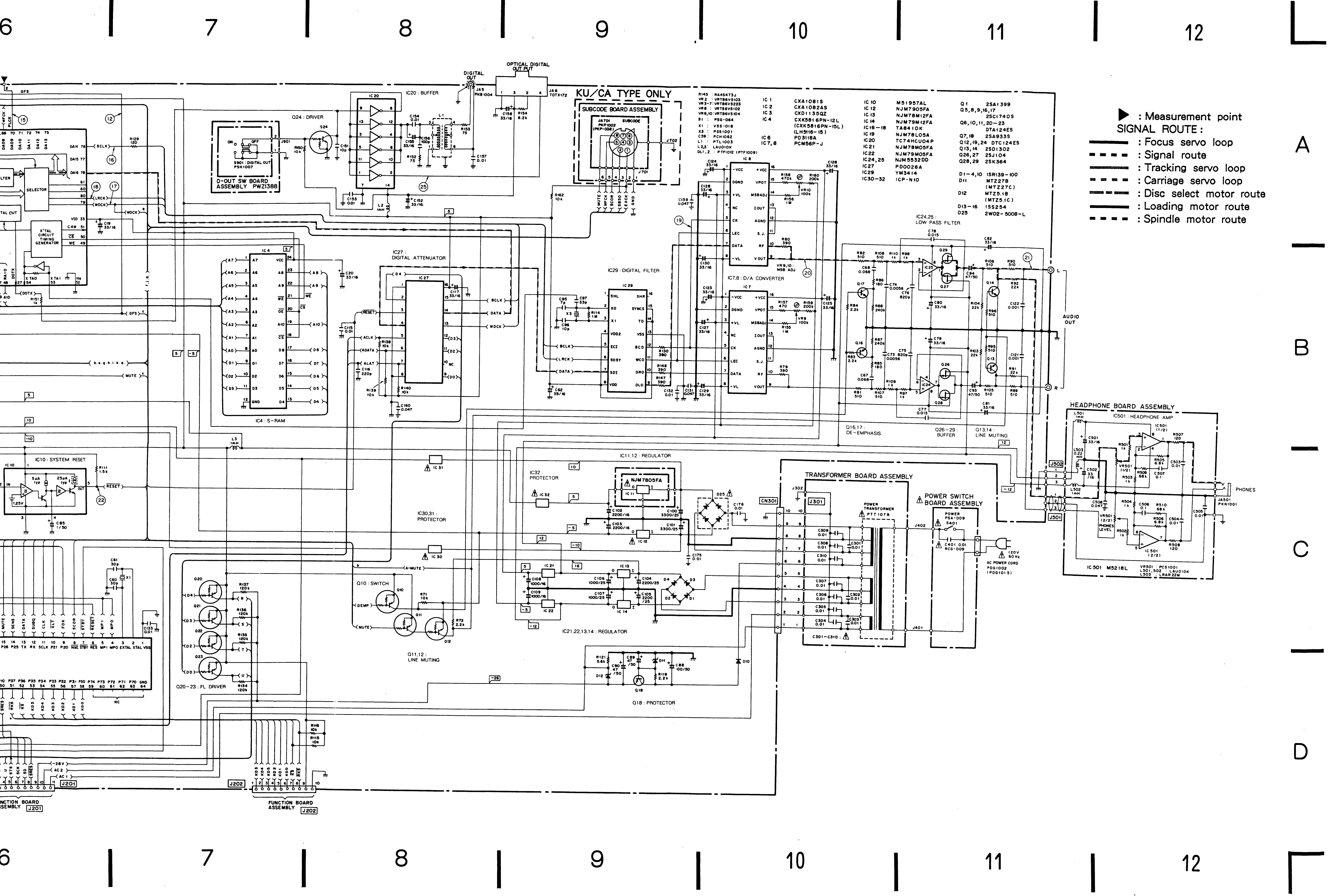
D201 SLH-56MC3H-S
D202 SLH-56YC3H-S

S201−204, S206−235
: PSG-064
V201 : PEL1023
X201 : RSS-035
L201, 202 : LAU010K

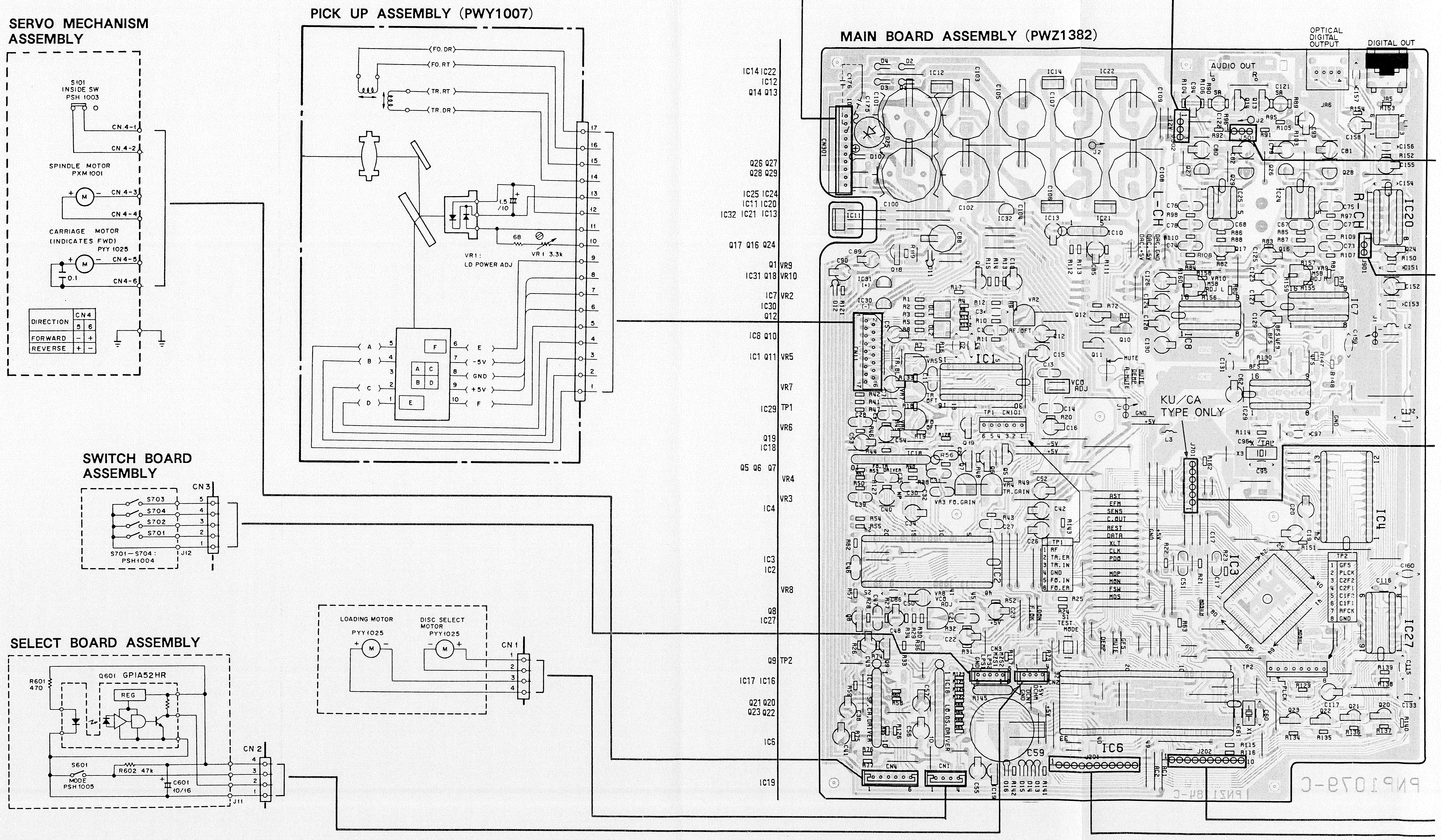
1 2 3 4 5 6

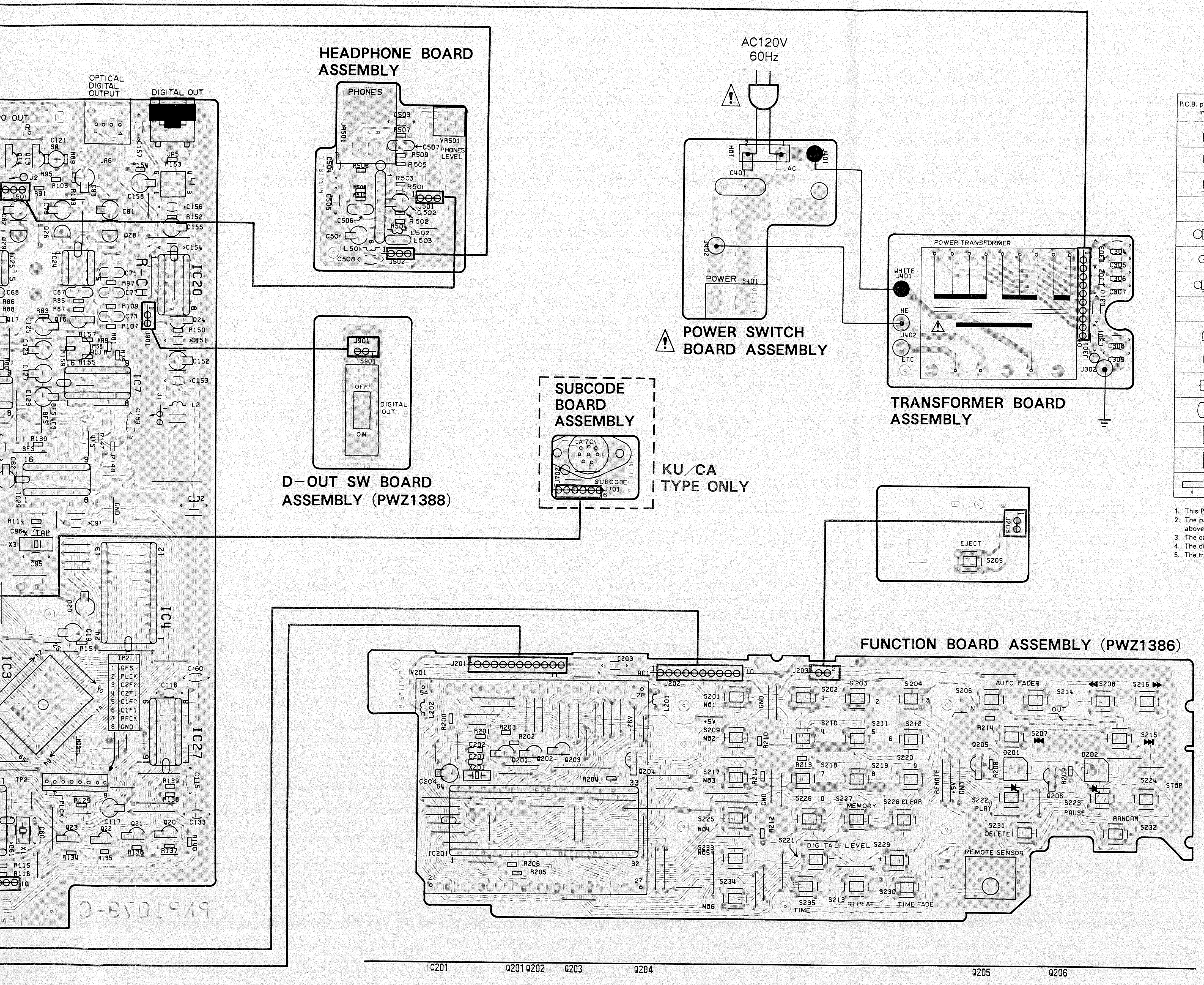

A
B
C
D
PICK UP ASSEMBLY PWY1007
MAIN BOARD ASSEMBLY PWZ1382
VR1 : LD POWER ADJ
CN11
IC1 : RF AMP
CURRENT REFERENCE
VOLTAGE REFERENCE
LEVEL SHIFT
FOK AMP
FOK COMPARATOR
EFM COMPARATOR
AUTO ASYMMETRY CONTROL AMP
AUTO ASYMMETRY BUFFER
APC LD AMP
APC PD AMP
RF SUMMING AMP
MIRROR AMP
PEAK HOLD
BOTTOM HOLD
MIRROR HOLD AMP
MIRROR COMPARATOR
MIRROR DIFFERENTIAL AMP
DEFECT AMP
DEFECT BOTTOM HOLD
DEFECT COMPARATOR
RF I-V AMP(1)
RF I-V AMP(2)
F I-V AMP
E I-V AMP
TRACKING ERROR AMP
FOCUS ERROR AMP
CENTER VOLTAGE BUFFER
Q1 : LD POWER
VR2 : RF OFFSET
VR7 : TRACKING OFFSET
VR5 : TRACKING BALANCE
VR6 : FOCUS OFFSET
IC3 : DECODER
VCO CIRCUIT TIMING GENERATOR
EFM-PLL
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
SUBCODE Q RESISTOR
23BIT SHIFT REGISTOR
EFM DEMODULATOR
FRAME SYNC DETECTOR PROTECTOR INSERTER
INTERPOLATOR
ERROR DETECTOR CORRECTOR
DIGITAL FILTER
SELECTOR
DIGITAL OUT
RAM ADDRESS GENERATOR
X'TAL CIRCUIT TIMING GENERATOR
CPU INTER FACE
CLV SERVO CONTROL
TRACKING COUNTER
SHORT CIRCUIT WHEN ADJUSTING VCO
CN102 TP2
TP1 CN101
RF
TR.ER OUT
TR IN
FO IN
FO.ER OUT
Q19 : INVERTER
VR8 : VCO ADJ
Q8,9 : PLL FILTER
IC2 : SERVO CONTROL
CLV. LPF
VCO
LOOP FILTER
3.5V REGULATOR
TRACKING PHASE COMPENSATION
I²L DATA REGISTER SEQUENCER
INPUT SHIFT REGISTER ADDRESS DECODER
OUTPUT DECODER
WINDOW COMPARATOR
B.P.F
FOCUS PHASE COMPENSATION
VR4 : TRACKING GAIN
VR3 : FOCUS GAIN
IC10 : SYSTEM RESET
SERVO MECHANISM ASSEMBLY (1/2)
SPINDLE MOTOR PXM1001
IC17 (1/2) : SPINDLE MOTOR DRIVE
SWITCH BOARD ASSEMBLY
S701–S704 : PSH1004
SELECT BOARD ASSEMBLY
Q601 GP1A52HR
S601 MODE PSH1005
IC16 (1/2) : DISC SELECT MOTOR DRIVE
LOADING MOTOR PYY1025
DISC SELECT MOTOR PYY1025
IC16 (2/2) : LOADING MOTOR DRIVE
IC18 (1/2) : FOCUS DRIVE
Q5–7 : RESET
IC18 (2/2) : TRACKING DRIVE
IC17 (2/2) : CARRIAGE MOTOR DRIVE
SERVO MECHANISM ASSEMBLY (2/2)
S101 INSIDE SW PSH1003
DIRECTION
FORWARD
REVERSE
CARRIAGE MOTOR (INDICATES FWD) PYY1025
TEST MODE SWITCH S1
IC6 : SYSTEM CONTROL
IC19 : REGULATOR
FUNCTION BOARD ASSEMBLY J201

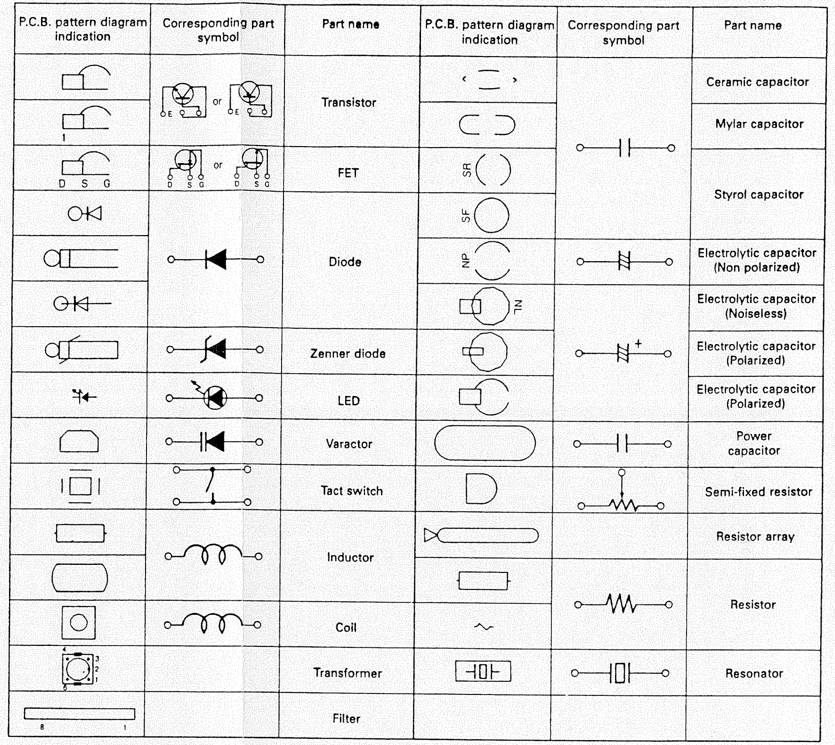
1 2 3 4 5 6


6
7
8
9
10
11
12
A
B
C
D
▶ : Measurement point
SIGNAL ROUTE :
: Focus servo loop
: Signal route
: Tracking servo loop
: Carriage servo loop
: Disc select motor route
: Loading motor route
: Spindle motor route
KU/CA TYPE ONLY
SUBCODE BOARD ASSEMBLY
JA701 PKP1002 (PKP-038)
SUBCODE
J702
J701
MUTE WFCK SCOR SBSO EXCK GND
DIGITAL OUT
JA5 PKB1004
OPTICAL DIGITAL OUT PUT
JA6 TOTX172
IC20 : BUFFER
Q24 : DRIVER
D-OUT SW BOARD ASSEMBLY PWZ1388
S901 : DIGITAL OUT PSH1007
J901
R145 : RA4S473J
VR2 : VRTB6VS103
VR3-7 : VRTB6VS223
VR8 : VRTS6VS102
VR9,10 : VRTB6VS104
S1 : PSG-064
X1 : VSS-018
X3 : PSS1001
C59 : PCH1062
L1 : PTL1003
L2,3 : LAU010K
DL1,2 : PTF1012 (PTF1009)
IC1 CXA1081S
IC2 CXA1082AS
IC3 CXD1135QZ
IC4 CXK5816PN-12L (CXK5816PN-15L) (LH5116-15)
IC6 PD3118A
IC7,8 PCM56P-J
IC10 M51957AL
IC12 NJM7905FA
IC13 NJM78M12FA
IC14 NJM79M12FA
IC16-18 TA8410K
IC19 NJM78L05A
IC20 TC74HCU04P
IC21 NJM78M05FA
IC22 NJM79M05FA
IC24,25 NJM5532DD
IC27 PD0026A
IC29 YM3414
IC30-32 ICP-N10
Q1 2SA1399
Q5,8,9,16,17 2SC1740S
Q6,10,11,20-23 DTA124ES
Q7,18 2SA933S
Q12,19,24 DTC124ES
Q13,14 2SD1302
Q26,27 2SJ104
Q28,29 2SK364
D1-4,10 1SR139-100
D11 MTZ27B (MTZ27C)
D12 MTZ5.1B (MTZ5.1C)
D13-16 1SS254
D25 2W02-5008-L
SELECTOR
DIGITAL OUT
X'TAL CIRCUIT TIMING GENERATOR
IC4 : S-RAM
IC27 : DIGITAL ATTENUATOR
IC29 : DIGITAL FILTER
IC7,8 : D/A CONVERTER
VR9,10 : MSB ADJ
IC24,25 : LOW PASS FILTER
Q16,17 : DE-EMPHASIS
Q26-29 : BUFFER
Q13,14 : LINE MUTING
AUDIO OUT
L
R
IC10 : SYSTEM RESET
IC11,12 : REGULATOR
NJM7805FA
IC32 PROTECTOR
IC30,31 : PROTECTOR
IC21,22,13,14 : REGULATOR
Q10 : SWITCH
Q11,12 : LINE MUTING
Q20-23 : FL DRIVER
Q18 : PROTECTOR
TRANSFORMER BOARD ASSEMBLY
POWER TRANSFORMER PTT1079
C301-C310
POWER SWITCH BOARD ASSEMBLY
POWER PSA-009 S401
C401 0.01 RCG-009
AC POWER CORD PDG1002 (PDG1015)
120V 60Hz
CN301
J301
J302
J401
J402
HEADPHONE BOARD ASSEMBLY
IC501 : HEADPHONE AMP
IC501 M5218L
VR501 : PCS1001
L501,502 : LAU010K
L503 : LRAR22M
VR501 PHONES LEVEL
PHONES
JA501 PKN1001
J501
J502
FUNCTION BOARD ASSEMBLY
J201
J202

6. P.C. BOARDS CONNECTION DIAGRAM

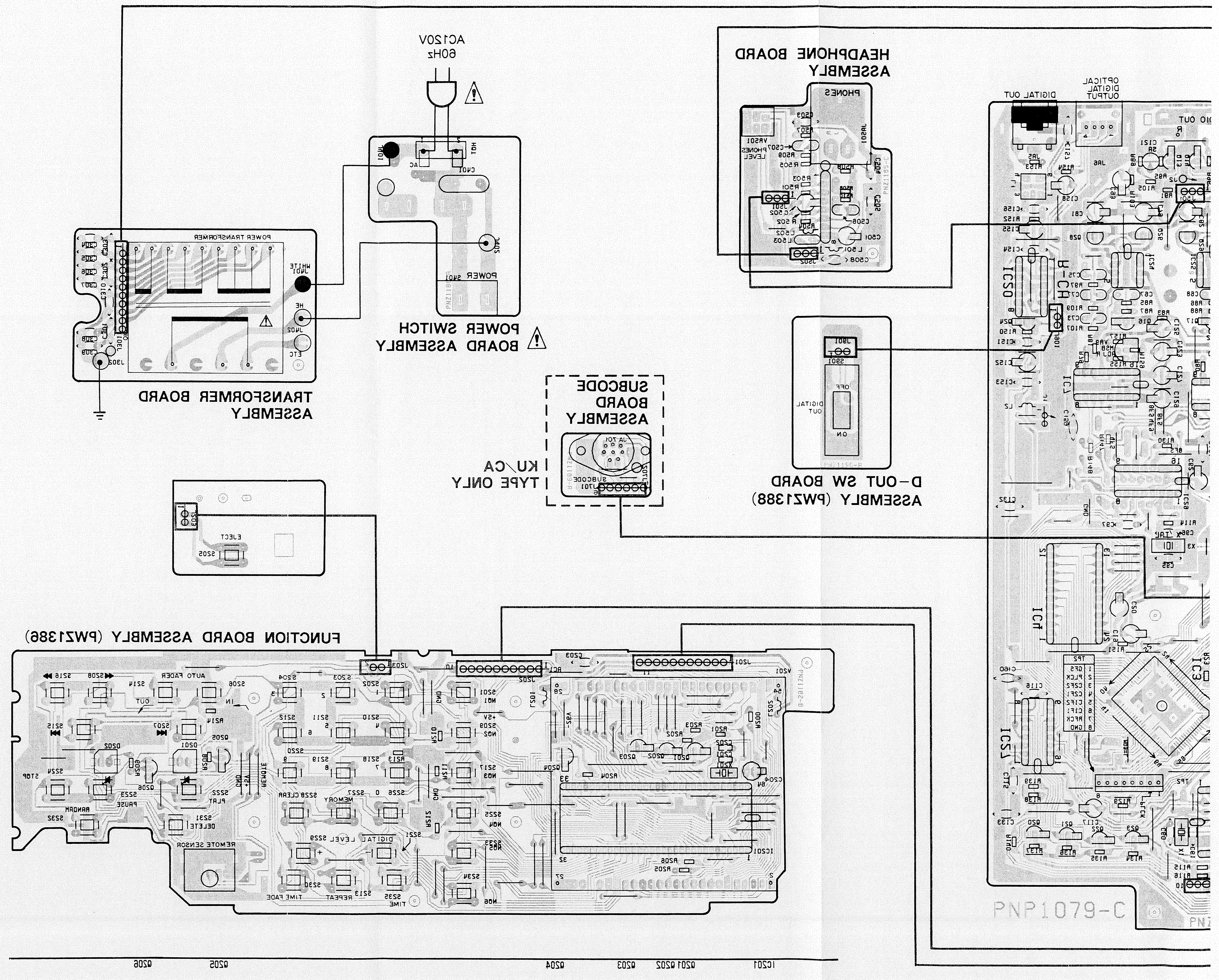

SERVO MECHANISM ASSEMBLY
S101 INSIDE SW PSH 1003
SPINDLE MOTOR PXM 1001
CARRIAGE MOTOR (INDICATES FWD) PYY 1025
CN 4-1
CN 4-2
CN 4-3
CN 4-4
CN 4-5
CN 4-6
DIRECTION
CN4
5
6
FORWARD
REVERSE
0.1
PICK UP ASSEMBLY (PWY1007)
FO. DR
FO. RT
TR. RT
TR. DR
1.5 /10
68
VR1 3.3k
VR1 : LD POWER ADJ
E
-5V
GND
+5V
F
A
B
C
D
SWITCH BOARD ASSEMBLY
CN3
S703
S704
S702
S701
S701—S704 : PSH1004
J12
SELECT BOARD ASSEMBLY
Q601 GP1A52HR
R601 470
REG
S601 MODE PSH1005
R602 47k
C601 10/16
CN 2
J11
LOADING MOTOR PYY1025
DISC SELECT MOTOR PYY1025
CN 1
MAIN BOARD ASSEMBLY (PWZ1382)
OPTICAL DIGITAL OUTPUT
DIGITAL OUT
AUDIO OUT
L-CH
R-CH
KU/CA TYPE ONLY
IC1
IC2
IC3
IC4
IC6
IC7
IC8
IC20
IC27
CN101
CN301
J201
J202
J204
TP1
TP2
PNP1079-C
IC14 IC22
IC12
Q14 Q13
Q26 Q27
Q28 Q29
IC25 IC24
IC11 IC20
IC32 IC21 IC13
Q17 Q16 Q24
Q1 VR9
IC31 Q18 VR10
IC7 VR2
IC30
Q12
IC8 Q10
IC1 Q11 VR5
VR7
IC29 TP1
VR6
Q19
IC18
Q5 Q6 Q7
VR4
VR3
IC4
IC3
IC2
VR8
Q8
IC27
Q9 TP2
IC17 IC16
Q21 Q20
Q23 Q22
IC6
IC19


HEADPHONE BOARD ASSEMBLY
PHONES
VR501 PHONES LEVEL
J501
J502
AC120V 60Hz
POWER SWITCH BOARD ASSEMBLY
POWER S401
J402
J401
TRANSFORMER BOARD ASSEMBLY
POWER TRANSFORMER
WHITE J401
HE J402
ETC
J301
J302
D-OUT SW BOARD ASSEMBLY (PWZ1388)
J901
S901
OFF
ON
DIGITAL OUT
SUBCODE BOARD ASSEMBLY
JA701
SUBCODE J701
KU/CA TYPE ONLY
EJECT
S205
J203
OPTICAL DIGITAL OUTPUT
DIGITAL OUT
R-CH
IC20
IC7
IC4
IC3
IC27
IC29
TP2
1 GFS
2 PLCK
3 C2F2
4 C2F1
5 C1F2
6 C1F1
7 RFCK
8 GND
PNP1079-C
FUNCTION BOARD ASSEMBLY (PWZ1386)
J201
J202
J203
AUTO FADER
S201 NO1
S209 NO2
S217 NO3
S225 NO4
S233 NO5
S234 NO6
S202
S203
S204
S206
S207
S208
S210
S211
S212
S213 REPEAT
S214
S215
S216
S218
S219
S220
S221
S222 PLAY
S223 PAUSE
S224 STOP
S226
S227 MEMORY
S228 CLEAR
S229
S230 TIME FADE
S231 DELETE
S232 RANDOM
S235 TIME
DIGITAL LEVEL
REMOTE SENSOR
IN
OUT
+5V
-26V
GND
REMOTE
IC201
X201
Q201
Q202
Q203
Q204
Q205
Q206
D201
D202
IC201 Q201 Q202 Q203 Q204 Q205 Q206

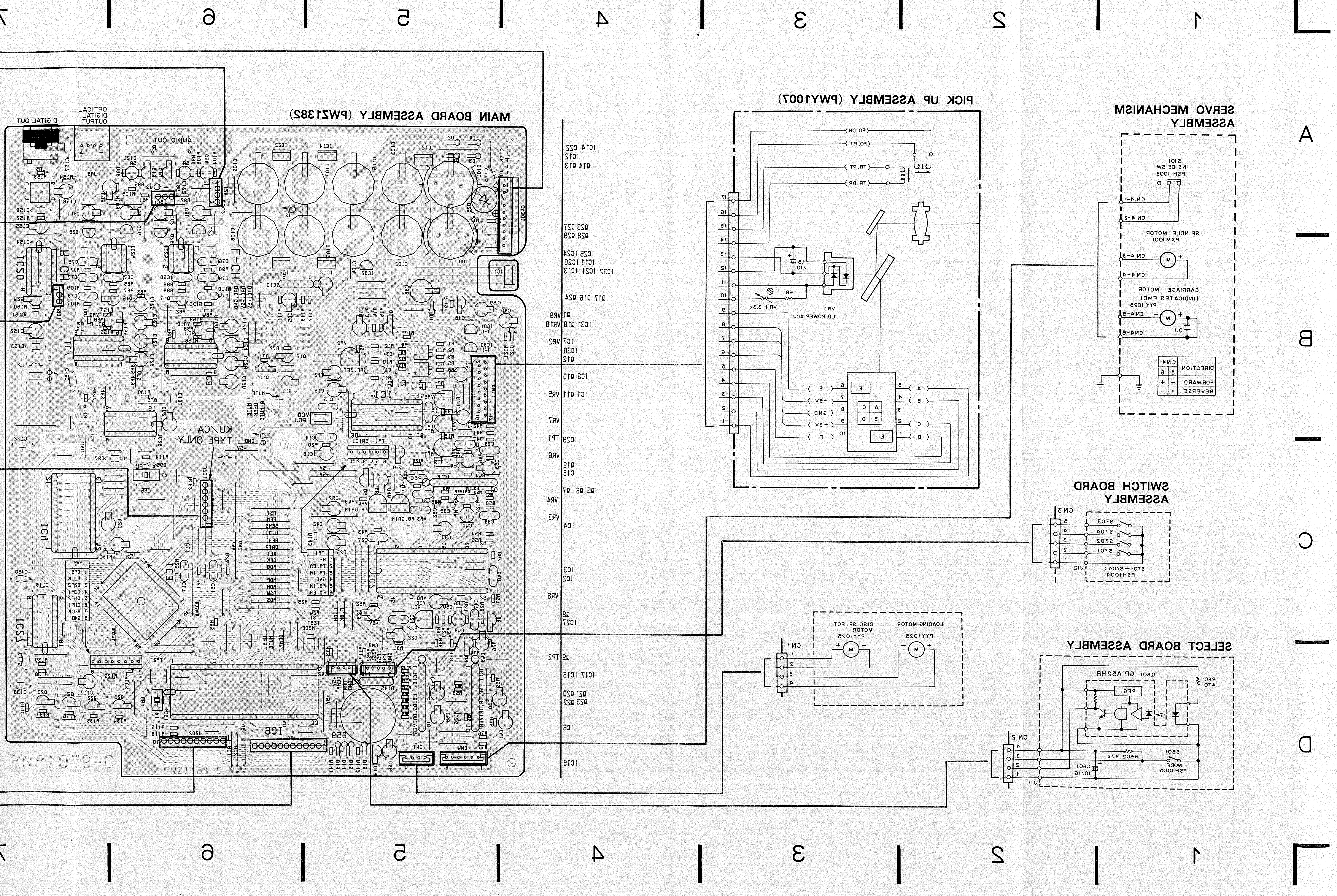


P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
1					Mylar capacitor
D S G		FET	SR		Styrol capacitor
		Diode	SF		
			NP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Power capacitor
		Tact switch			Semi-fixed resistor
		Inductor			Resistor array
					Resistor
		Coil			
		Transformer			Resonator
8 1		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.


12
11
10
9
8
7
A
B
C
D
AC120V
60Hz
POWER SWITCH BOARD ASSEMBLY
TRANSFORMER BOARD ASSEMBLY
POWER TRANSFORMER
HEADPHONE BOARD ASSEMBLY
PHONES
PHONES LEVEL
SUBCODE BOARD ASSEMBLY
KU/CA TYPE ONLY
D-OUT SW BOARD ASSEMBLY (PWZ1388)
DIGITAL OUT
OPTICAL DIGITAL OUTPUT
EJECT
FUNCTION BOARD ASSEMBLY (PWZ1386)
AUTO FADER
STOP
PAUSE
PLAY
RANDOM
DELETE
REMOTE SENSOR
MEMORY
CLEAR
DIGITAL LEVEL
TIME FADE
REPEAT
TIME
PNP1079-C
IC201
Q201 Q202
Q203
Q204
Q205
Q206

This P.C.B. connection diagram is viewed from the foil side.


MAIN BOARD ASSEMBLY (PWZ1382)
PICK UP ASSEMBLY (PWY1007)
SERVO MECHANISM ASSEMBLY
SWITCH BOARD ASSEMBLY
SELECT BOARD ASSEMBLY
DIGITAL OUT
OPTICAL DIGITAL OUTPUT
AUDIO OUT
KU/CA TYPE ONLY
L-CH
R-CH
PNP1079-C
PNZ1184-C
VR1 : LO POWER ADJ
S101 INSIDE SW PSH1003
SPINDLE MOTOR PXM1001
CARRIAGE MOTOR (INDICATES FWD) PYY1025
DIRECTION
FORWARD
REVERSE
S701–S704 : PSH1004
LOADING MOTOR PYY1025
DISC SELECT MOTOR PYY1025
Q601 GP1A52HR
REG
R601 470
R602 47K
C601 10/16
S601 MODE PSH1005
A
B
C
D
1
2
3
4
5
6
7

7. ADJUSTMENTS

The adjustment items of this model should be performed in the order as shown below.

• Adjustment and check Items

1. Tracking offset. focus offset and RF offset adjustments
2. RF level adjustment
3. LD (Laser Diode) output power confirmation
4. Focus lock and spindle lock confirmation
5. Grating adjustment
6. Tracking balance adjustment
7. Tangential adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-run frequency adjustment
11. Method to confirm S character (FOCUS ERROR)

• Measuring Equipment

1. Dual trace oscilloscope
2. Laser power meter
3. Test disc (YEDS7)
4. Tracking balance adjustment filter
5. Loop gain adjustment filter
6. Signal generator
7. Frequency counter
8. Other general tools

• Test Mode

Test Mode setting and cancellation procedures

(1) To set the Test Mode, turn the POWER switch of the player (S401) ON pushing the TEST MODE SWITCH (S1).

(2) To canacel the Test Mode, simply turn the POWER switch of the player OFF.

The various key functions in the Test Mode are listed in Table 7-1

• Adjusting Points

VR1: Laser power
VR7: Tracking offset (TRK.OFS)
VR3: Focus gain (FCS.GAN)
VR4: Tracking gain (TRK.GAN)
VR5: Tracking balance (TRK.BAL)
VR6: Focus offset (FCS.OFS)
VR8: VCO adjustment (VCO.ADJ)
VR2: RF offset (RF.OFS)
VR9 : MSB adjustment (RCH)
VR10 : MSB adjustment (LCH)

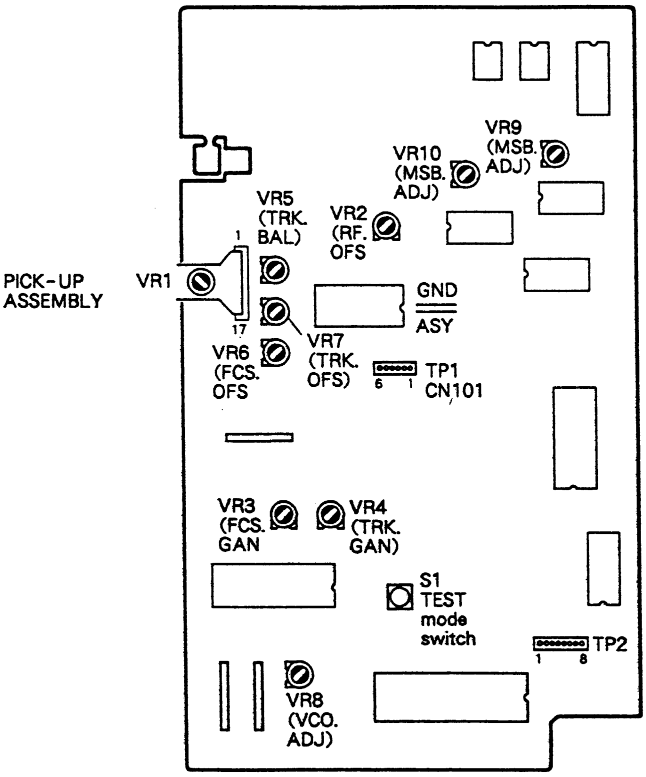
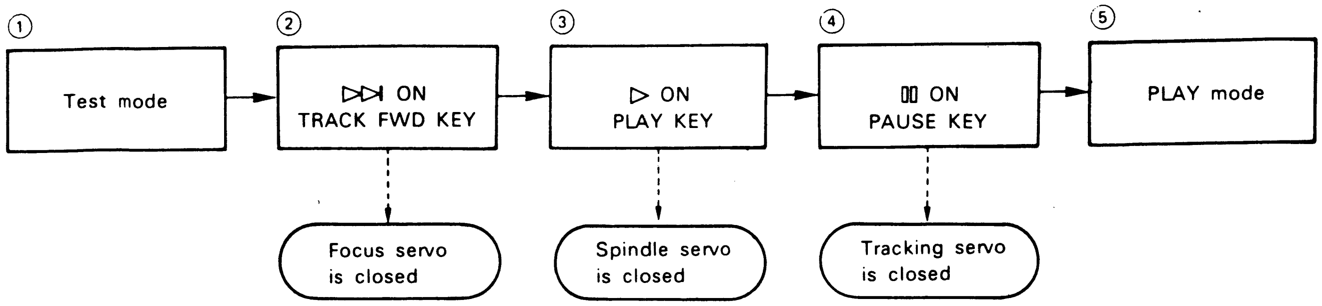

VR9 (MSB. ADJ)
VR10 (MSB. ADJ)
VR5 (TRK. BAL)
VR2 (RF. OFS
1
PICK-UP ASSEMBLY
VR1
17
GND
ASY
VR6 (FCS. OFS
VR7 (TRK. OFS)
6
1
TP1
CN101
VR3 (FCS. GAN
VR4 (TRK. GAN)
S1 TEST mode switch
TP2
1
8
VR8 (VCO. ADJ)

Fig. 7-1 Adjusting point

In the Test Mode. each servo circuit can be closed and opened by separate operations. Consequently. each servo must be closed one at a time (in serial sequence) to set PLAY mode.
Note that PLAY mode is not activated by simply pressing the PAUSE key (⏸) in the Test Mode.

Example: Switching from STOP to PLAY mode.

* The each servo mechanisms operate in a serial sequence in the Test Mode.



• Key Functions in Test Mode

Symbol	Key name	Function during test mode	Description
⏭	TRACK FWD	Focus servo is closed.	Laser diode lights up. Actuator is moved up/down, then focus servo is closed.
▷	PLAY	Spindle servo is closed.	Spindle starts to rotate and the servo is closed when it turns into the CLV-A servo mode.
⏸	PAUSE	Tracking servo is closed/opened.	Performs toggle operation. Closing the tracking servo and becomes PLAY mode by depressing the key (Focus servo and spindle servo must be closing), and PAUSE indicator lights up. Tracking servo opens by depressing the key again.
◁◁	MANUAL SEARCH REV	Carriage moves in reverse direction. (towards disc center)	Carriage is moved towards disc center at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
▷▷	MANUAL SEARCH FWD	Carriage moves in forward direction. (towards disc end)	Carriage is moved towards disc end at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
□	STOP	STOP	All servos are opened.
⏏	EJECT	(CD Magazine) EJECT	CD Magazine is ejected. However, pickup does not return to the park position. Moreover, even when disc is closed the pickup remains as is.

Table 7-1

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
1	**TRACKING OFFSET, FOCUS OFFSET AND RF OFFSET ADJUSTMENT**					
				VR5 (TRK.BAL)	45°	• Set to TEST mode. (See page 33.) • Turn VR5 TRK.BAL (Tracking balance) volume clockwise 45° from the center.
			TP1 PIN 2 (TRK.ERR)	VR7 (TRK.OFS)	0V±50 mV	• Adjust with VR7 TRK OFS (Tracking offset) volume so that the voltage of pin 2 TRK.ERR (Tracking error) of TP1 becomes 0V±50 mV.
			TP1 PIN 6 (FCS.ERR)	VR6 (FCS.OFS)	FOCUS offset 0V±50 mV	• Adjust VR6 FCS.OFS (focus offset) so that the FCS.ERR (focus error) voltage at TP1 pin 6 becomes 0V±50 mV.
			TP1 PIN 1 (RF OUTPUT)	VR2 (RF.OFS)	RF offset 100 mV±50 mV	• Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 PIN 1 becomes 100 mV±50 mV.
2	**RF LEVEL ADJUSTMENT**					
			TP1 Pin 1 (RF)	VR1 Laser power	1.8Vp-p ± 0.1V	• Set to TEST mode. (See page 33.) • Play TEST disc and connect probe of an oscilloscope to pin 1 RF (RF output) of TP1 and measure the P-P voltage of RF waveform. • Adjust VR1 (Laser power) so that the value is within 1.8Vp-p ± 0.1V.
3	**LD (LASER DIODE) OUTPUT POWER CONFIRMATION**					
					Confirmation: less than 0.13 mW	• Set to TEST mode. (See page 33.) • Press TRACK FWD key (▷▷|) and turn ON LD (laser diode). • Place sensor of the laser power meter immediately above the object lens and confirm that the output power of the LD is less than 0.13 mW.
4	**FOCUS LOCK AND SPINDLE LOCK CONFIRMATION**					
	0.5V/div	100 msec/div	TP1 Pin 1 (RF output)		RF output exists Normal rotation	• Set TEST disc. • Set to TEST mode. (See page 33.) • Shift the pickup close to the center of the disc by pressing the MANUAL SEARCH FWD key (▷▷). * Note that this step must be performed. • Cbserve pin 1 RF (RF output) of TP1 with an oscilloscope and confirm that the RF signal is output after pressing the TRACK FWD key (▷▷|). • Press PLAY key (▷) and be sure that the disc rotates in normal direction at almost the specified speed (as it is close to the center of the disc, the rotating speed is around 30 rpm) and not rotates abnormally or inversely.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
5	**GRATING ADJUSTMENT**					

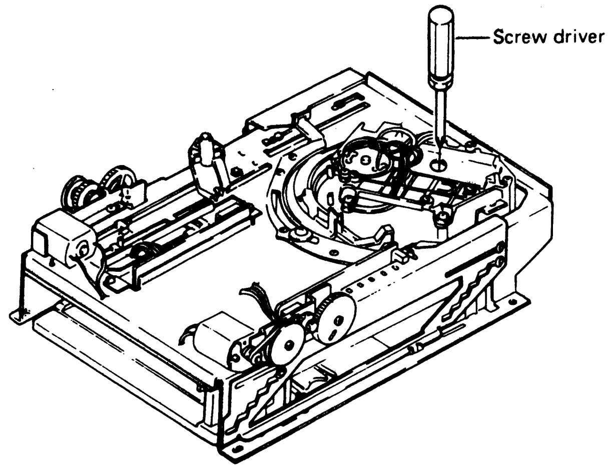


Fig. 7-2

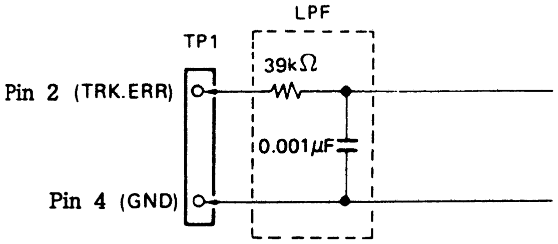


Fig. 7-3

- Set to TEST mode. (See page 33.)
- Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷) so that the grating adjustment screw of the pickup can be seen through the oval hole of the upper side of the servo mechanism.
- Insert a grating driver into the adjusting hole from the upper side of the mechanism as shown in Fig.7-2, and confirm that the grating screw turns.
- Press TRACK FWD key (▷▷|) and PLAY key (▷) sequentially and close the focus servo and spindle servo. (Do not close the tracking servo.)
- Observe the waveform of pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope. At this point, insert a 4 kHz cutoff low-pass filter. (Fig. 7-3)

Step No.	V	H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	0.5V/div	5 ms/div	TP1 Pin 2 TRK.ERR	Grating	Null point	• Turn a grating driver and find null point. (Photo. 7-1)
				Grating	Maximum amplitude	• Then, turn slowly the grating driver **counter clockwise** from the null point and adjust at the point where the waveform (Tracking error signal) firstly becomes maximum amplitude.(See Photo.7-3.)

Note:
If the grating driver is pressed strongly, the pickup moves toward disc center, accordingly adjustment becomes difficult.

- Finally, be sure to confirm that the tracking error signal (at this time, 4 kHz of cutoff low-pass filter is not inserted) when the pickup is moved toward the disc center and the P-P voltage of the tracking error signal at the outer circumference of the disc are not varied greatly. When the level is deviated over ±10%, adjust again by turning grating screw to the maximum error amplitude point.

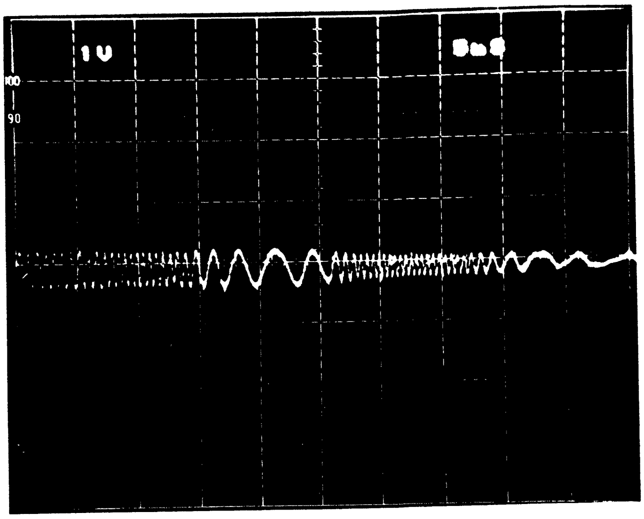


Photo 7-1 Null point

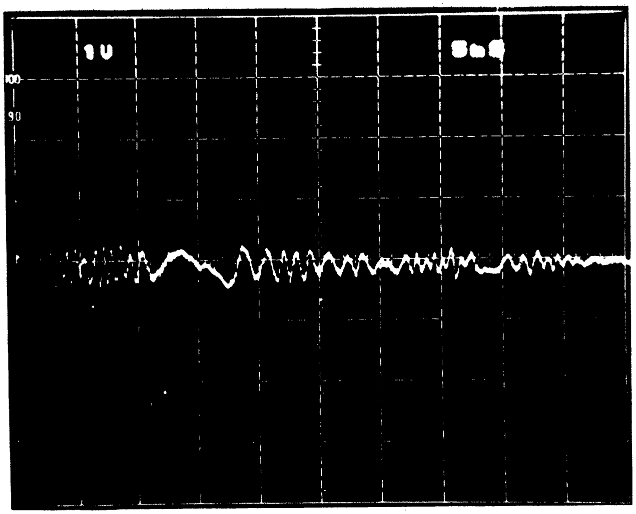


Photo 7-2 Waveform of not null point

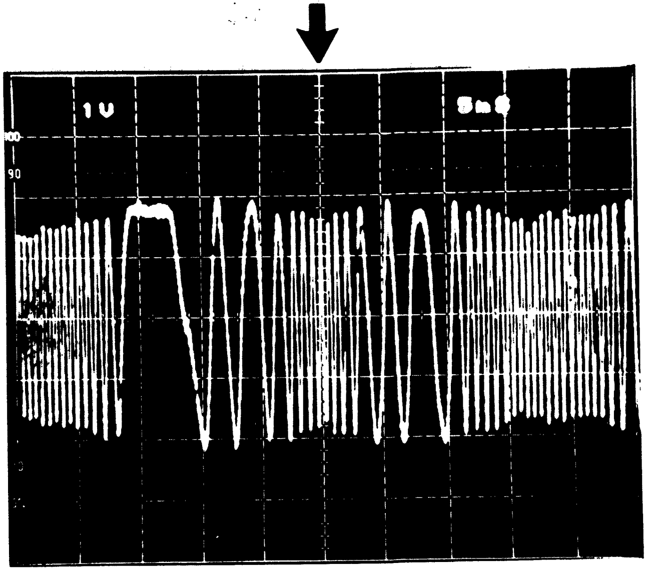


Photo 7-3 Maximum amplitude

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
6	TRACKING BALANCE ADJUSTMENT					
	0.5V/div	5 msec /div	TP1 Pin 2 (TRK.ERR)	VR5 (TRK.BAL)	(TRK.ERR)	• Set the TEST disc. • Set to TEST mode. (See page 33.) • Shift the carriage close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). • Press TRACK FWD key (▷▷|), and PLAY key (▷) to start turning the disc. • Observe pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope and adjust with VR5 TRK.BAL (Tracking balance) volume so that the DC component of the tracking error disappears. Note :Before proceeding with the above adjustments, be sure to adjust the tracking error offset.

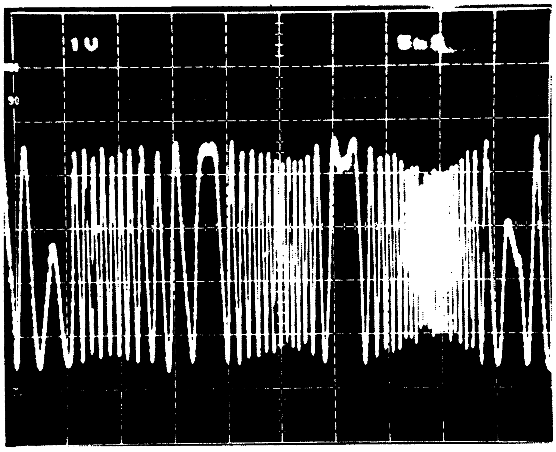


Photo 7-4 DC component exists

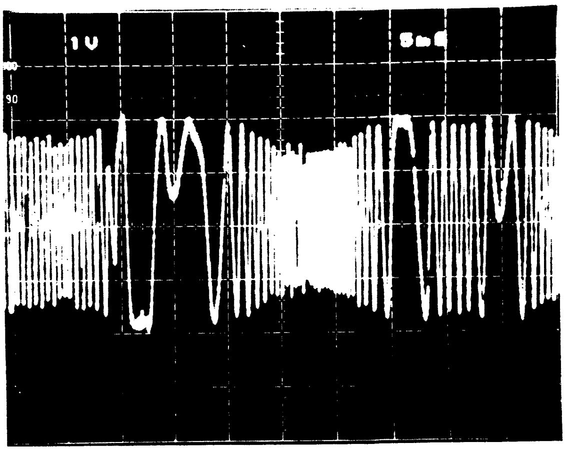
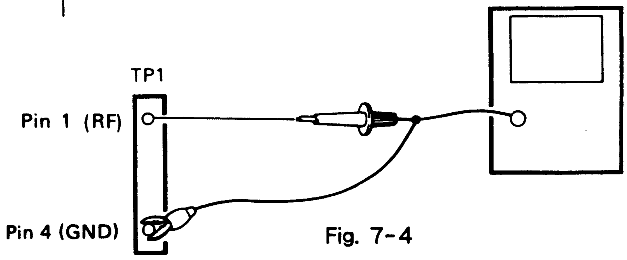
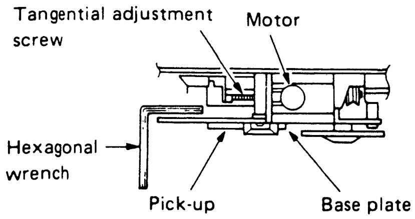


Photo 7-5 DC component not exist

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
7	**TANGENTIAL ADJUSTMENT**					
		200nS	TP1 Pin 1 (RF output)	Tangential adjustment screw	Best eye pattern	• Set the TEST disc. • Set to TEST mode. (See page 33.) • Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). • Press TRACK FWD key (▷▷|), PLAY key (▷) and PAUSE key (⏸) sequentially, and close all the servos. (Pause indicator lights up.) • Observe pin 1 RF (RF output) of TP1 with an oscilloscope and adjust with the tangential screw so that the eye pattern becomes clear. (Fig. 7-4) • The adjusting point is the middle point between the point where the eye pattern becomes deteriorate by turning the tangential screw clockwise and the point where the eye pattern becomes deteriorate by turning the tangential screw counterclockwise. As a criterion, observe that the overall waveform is clear and one of the diamond shapes within the eye pattern (Photo. 7-6), and adjust at as an optimum point where the diamond shape is seen relatively fine line.  Fig. 7-4 Note: During the adjustment, hold hexagonal wrench to upward so as to keep the pickup body not goes down.


Tangential adjustment screw
Motor
Hexagonal wrench
Pick-up
Base plate

In the figure below, the top and bottom is opposite to that of the actual product.

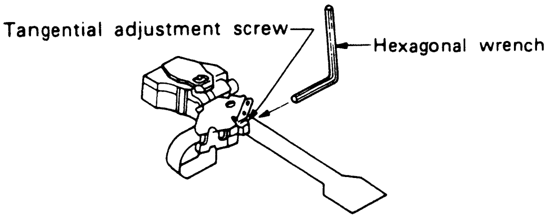

Tangential adjustment screw
Hexagonal wrench

Fig. 7-5 Tangential adjustment

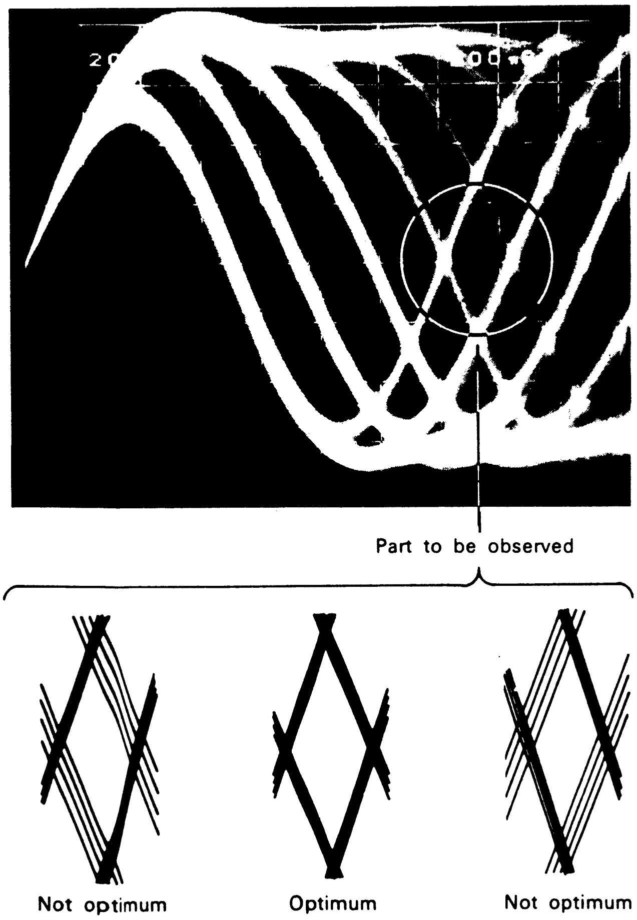


Photo 7-6

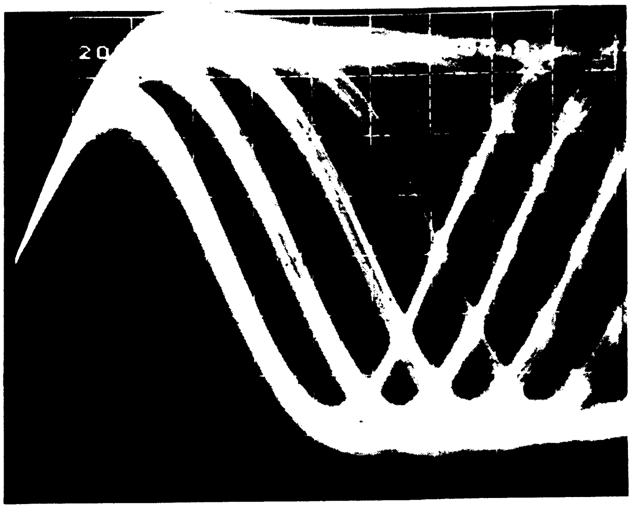


Photo 7-7

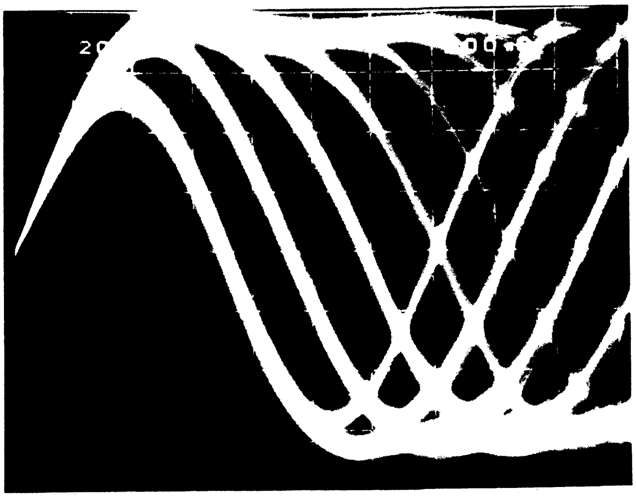


Photo 7-8

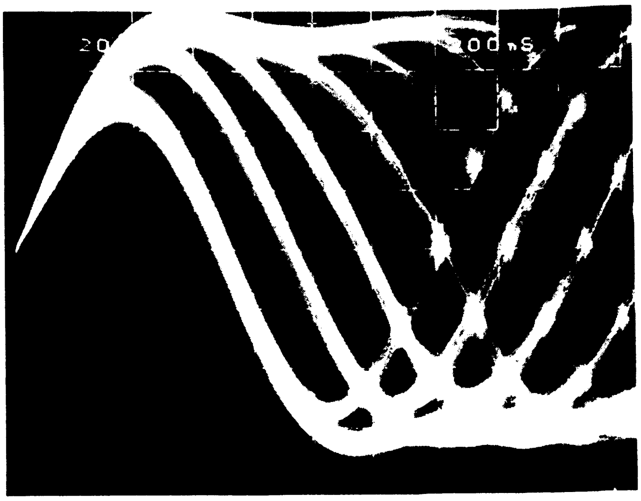
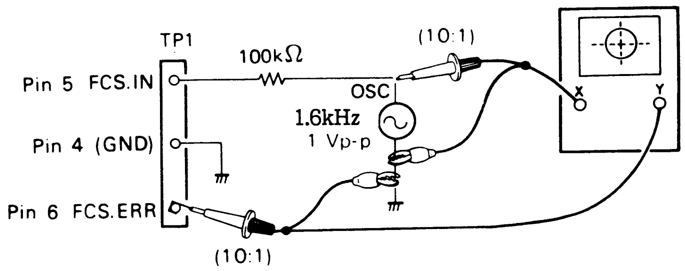


Photo 7-9

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
8	**FOCUS GAIN ADJUSTMENT**					
	20mV/div.5/mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis TP1 Pin 5 (FCS.IN) Y axis TP1 Pin 6 (FCS.ERR)	VR3 (FCS.GAN)	Phase difference 90°	- In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig.7-6. - In the NORMAL mode, press the PLAY key. - Turn the POWER of oscillator ON and output 1.6kHz 1 Vp-p. Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.) - Adjust with VR3 FCS.GAN (Focus gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (Phase difference 90°).  TP1 (10:1) 100kΩ Pin 5 FCS.IN OSC 1.6kHz 1 Vp-p X Y Pin 4 (GND) Pin 6 FCS.ERR (10:1) Fig. 7-6

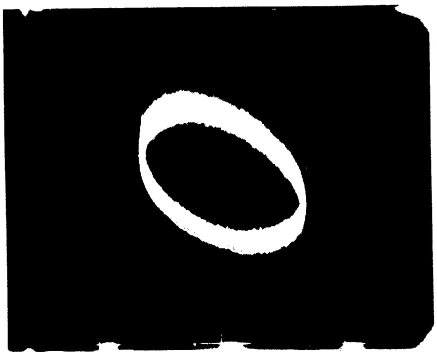


Photo 7-10 High gain

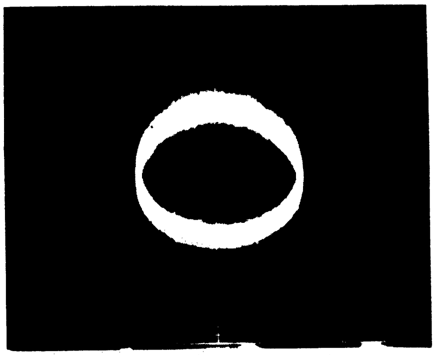


Photo 7-11 Optimum gain

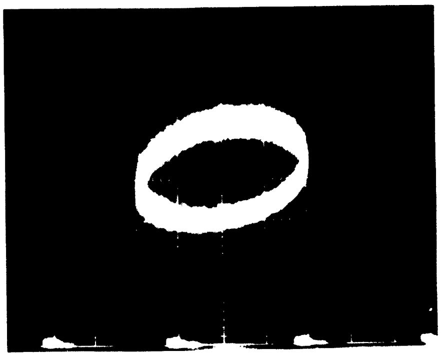


Photo 7-12 Low gain

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
9	**TRACKING GAIN ADJUSTMENT**					
	50 mV/div.5mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis TP1 Pin 3 (TRK.IN) Y axis TP1 Pin 2 (TRK.ERR)	VR4 (TRK.GAN)	Phase difference 90°	• In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig.7-7. • In the NORMAL mode, press the PLAY key. Turn the POWER of oscillator ON and output 1.2 kHz 2 Vp-p. Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.) • Adjust with VR4 TRK GAN (Tracking gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (phase difference 90°).

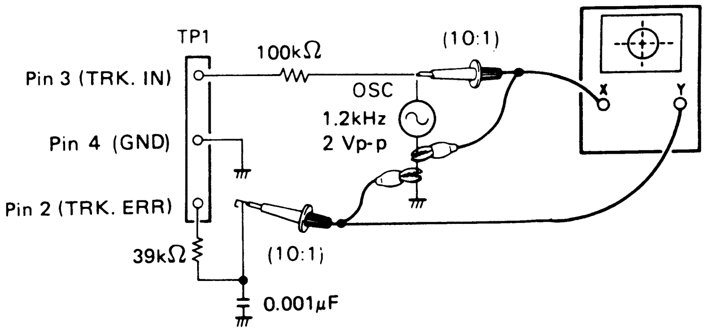


Fig. 7-7

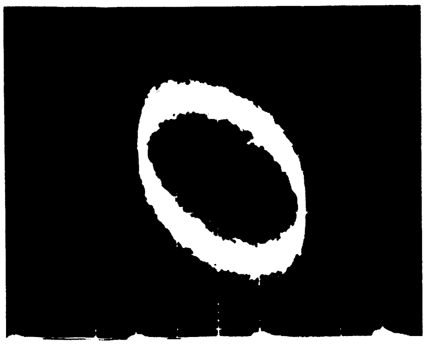


Photo 7-13 High gain

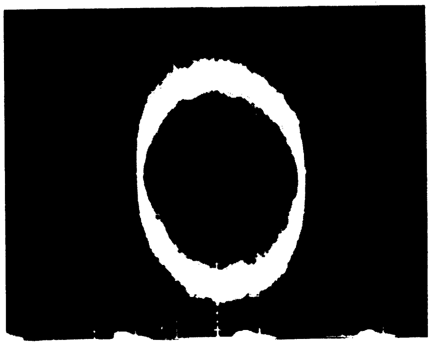


Photo 7-14 Optimum gain

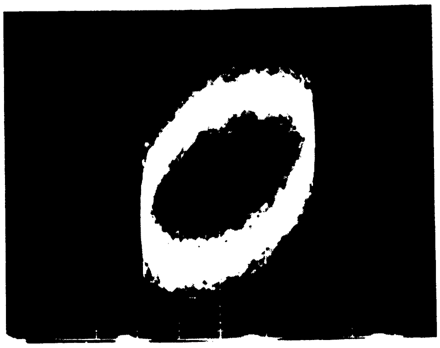
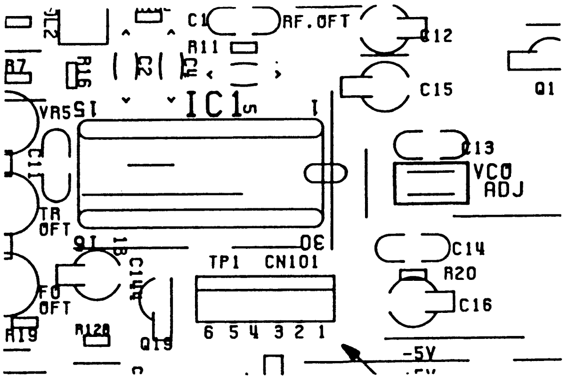
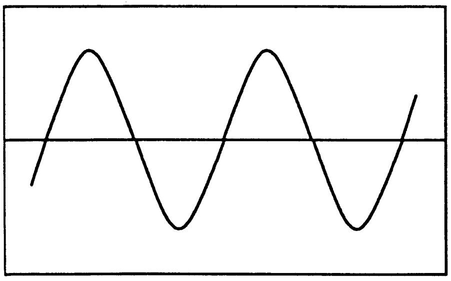


Photo 7-15 Low gain

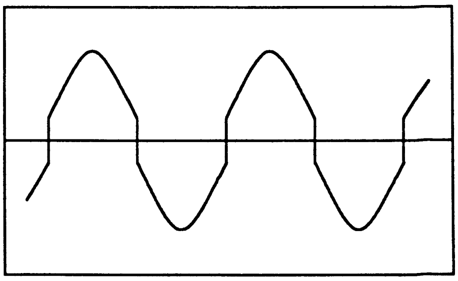
Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
10	**VCO FREE RUN FREQUENCY ADJUSTMENT**					
			TP2 Pin 2	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Set to TEST mode. (See page 33.) • Short-circuit between ASY and GND jumper with grating driver, etc. (Fig. 7-8) • Connect frequency counter, which is measurable over 10 MHz, to pin 2 of TP2. • Adjust with VR8.VCO ADJ (VCO adjustment) volume so that the value of frequency counter becomes 4.275±0.025 MHz.  C1 RF.OFT C12 R11 R7 R16 C2 C4 C15 Q1 VR5 15 IC1 5 1 C11 C13 VCO ADJ TR OFT 16 18 30 C14 TP1 CN101 R20 FO OFT C16 R19 R128 Q19 6 5 4 3 2 1 -5V Fig. 7-8
11	**METHOD TO CONFIRM S CHARACTER (FOCUS ERROR)**					
						• Set to TEST mode. (See page 33.) • Short-circuit between pin 5 FCS. IN (Focus in) of TP1 and GND. • Press TRACK FWD key (▷▷|) and observe the waveform of pin 6 FCS.ERR (Focus error) of TP1 at that time with an oscilloscope.

<table>
<tr><th rowspan="2">Step No.</th><th colspan="2">Oscilloscope Setting</th><th rowspan="2">Test Points</th><th rowspan="2">Adjusting Points</th><th rowspan="2">Check items/ Adjustment specifications</th><th rowspan="2">Adjustment procedure</th></tr>
<tr><th>V</th><th>H</th></tr>
<tr><td>12</td><td colspan="6">LINEAR ENVELOPE ADJUSTMENT
(D/A CONVERTER ZERO CROSS DISTORTION ADJUSTMENT)</td></tr>
<tr><td></td><td>5mV/div</td><td>0.2msec/div</td><td>JA1 LINE OUTPUT terminal (LCH)</td><td></td><td></td><td>● Enter normal play mode.
● Play back the track 20 (−60 dB, 1kHz, Lch, Rch) of the test disc (YEDS-7). Connect the oscilloscope to the Lch of the LINE OUTPUT terminal (JA1), and observe the audio output waveform.</td></tr>
<tr><td></td><td></td><td></td><td></td><td>VR10</td><td>Sine wave</td><td>● Adjust VR10 MSB (Lch) so that the sine wave is obtained on the oscilloscope.</td></tr>
<tr><td></td><td></td><td></td><td>JA1 LINE OUTPUT terminal (RCH)</td><td>VR9</td><td>Sine wave</td><td>● Adjust VR9 (Rch) in the same way.</td></tr>
</table>

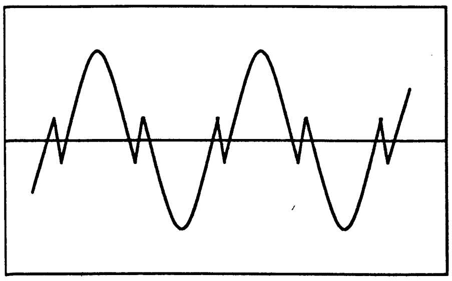
● ZERO cross distortion waveform



OK



NG



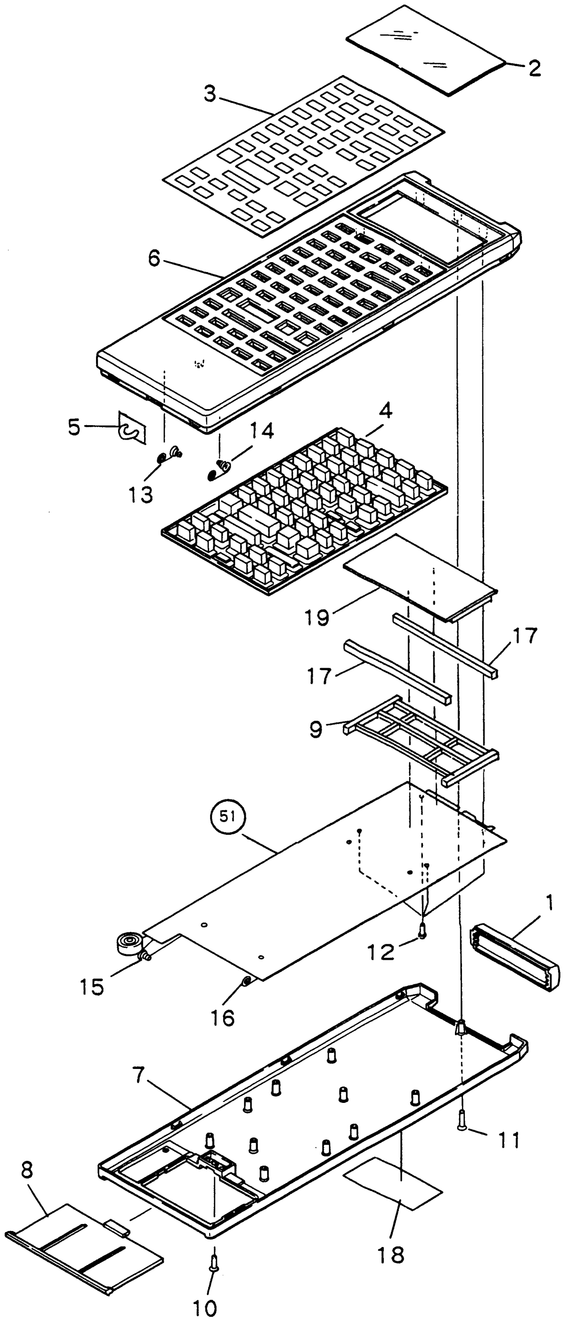
NG

8. REMOTE CONTROL UNIT

NOTES :
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

8.1 PARTS LIST OF REMOTE CONTROL UNIT

Mark	No.	Part No.	Description
	1	PAM1157	Filter
	2	PAM1158	Window
	3	PAN1099	Name plate
	4	PEB1064	Rubber switch
	5	PNB1162	Fook
	6	PNW1315	Case (T)
	7	PNW1316	Case (B)
	8	PNW1317	Battery case
	9	PNW1428	Frame
	10	CTZ20P080FZK	Screw
	11	CTZ20P140FZK	Screw
	12	PTZ20P050FMC	Screw
	13	PBK1047	Terminal
	14	PBK1048	Terminal
	15	PBK1049	Terminal
	16	PBK1050	Terminal
	17	PBE1092	Connector
	18	PRW1020	Label
	19	PCX1016	LCD
	51		Remote control board assembly



8.2 ELECTRICAL PARTS LIST

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC1	PD5071
★★	IC2	μPD7228
★★	IC3	MN1280P
★★	Q1	2SA1162 (2SA1235)
★★	Q2	2SC3265 (2SC3440) (2SD596)
★	D1	SE303A-Y (LD271E317) (TLN111)

SWITCH

Mark	Symbol & Description	Part No.
★★	S1 Tact switch	PSG1004

CAPACITORS

Mark	Symbol & Description	Part No.
	C1 (0.047F)	PCH1071
	C2 (47μF/10V)	CEAS470M10
	C3 (47pF)	PCH1068
	C4 (33pF)	PCH1069
	C5 (0.01μF)	PCH1070

RESISTORS

Mark	Symbol & Description	Part No.
	R1 (7.5Ω)	PCN1017
	R2 (330Ω)	PCN1018
	R5 (1kΩ)	PCN1019
	R3,R8 – R15 (100kΩ)	PCN1020
	R4,R6 (330kΩ)	PCN1021
	R7 (1MΩ)	PCN1022

OTHERS

Mark	Symbol & Description	Part No.
	X1 Crystal resonator	PSS1003
	V1 LCD	PCX1016
	J1 – J4	PCN1016

9. FOR HEM AND HB TYPES

NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

$560\,\Omega \rightarrow 56 \times 10^1 \rightarrow 561$ ·· RD1/4PS$\boxed{5}\boxed{6}\boxed{1}$J
$47k\,\Omega \rightarrow 47 \times 10^3 \rightarrow 473$ ·· RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
$0.5\,\Omega \rightarrow 0R5$ ·· RN2H$\boxed{0}\boxed{R}\boxed{5}$K
$1\,\Omega \rightarrow 010$ ·· RS1P$\boxed{0}\boxed{1}\boxed{0}$K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

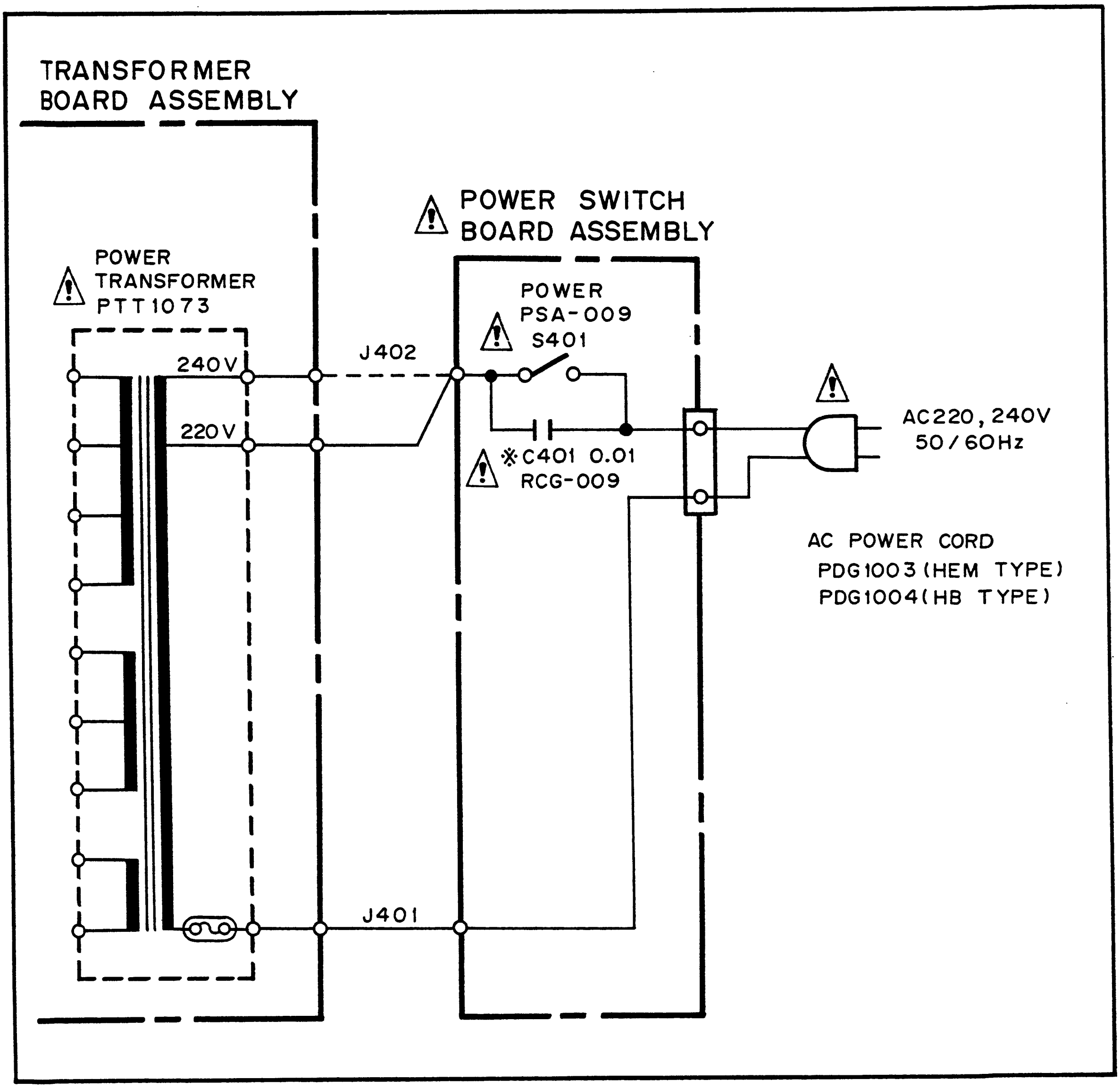
$5.62k\,\Omega \rightarrow 562 \times 10^1 \rightarrow 5621$ ···································· RN1/4SR$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F

9.1 CONTRAST OF MISCELLANEOUS PARTS

The PD−M700/HEM and HB types are the same as the PD−M700/KU/CA type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PD−M700 /KU/CA type	PD−M700 /HEM type	PD−M700 /HB type	
	Subcode board assembly	Non supply	• • • • •	• • • • •	
⚠	Strain relief	CM-22C	CM-22B	CM-22B	
	FL filter	PAM1144	PAM1194	PAM1194	
	Connection cord with pin plug	PDE1001	PDE1003	PDE1003	
⚠ ★	Power transformer (AC120V)	PTT1079	• • • • •	• • • • •	
⚠ ★	Power transformer (AC220V/240V)	• • • • •	PTT1073	PTT1073	
	Packing case	PHG1209	PHG1182	PHG1182	
	Operating instructions (English)	PRB1043	• • • • •	PRB1043	
	Operating instructions (Spanish/Portgauese/Swedish /Dutch)	• • • • •	PRF1013	• • • • •	
	Operating instructions (English/French/German/Italian)	• • • • •	PRE1045	• • • • •	
⚠	AC power cord	PDG1002	PDG1003	PDG1004	
	Insulation sheet	• • • • •	Non supply	Non supply	

9.2 SCHEMATIC DIAGRAM FOR HEM AND HB TYPES


TRANSFORMER
BOARD ASSEMBLY
POWER SWITCH
BOARD ASSEMBLY
POWER
TRANSFORMER
PTT1073
240V
220V
J402
POWER
PSA-009
S401
※C401 0.01
RCG-009
AC220, 240V
50/60Hz
AC POWER CORD
PDG1003 (HEM TYPE)
PDG1004 (HB TYPE)
J401

Line Voltage Selection
(For HEM and HB types)

Line voltage can be changed with following steps.

1. Disconnect the AC Power cord.
2. Remove the Bonnet case.
3. Change the connection of the primary lead wires (J402). (Connect as shown in schematic diagram)
4. Stick the line voltage label on the rear panel.

Description	Part No.
220V label	AAX-193
220V lable	AAX-192

10. FOR PD−M600/KU AND KC TYPES

NOTES :
- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5 %, and K = 10 %).

560 Ω → 56×10^1 → 561 ········· RD1/4PS$\boxed{5}\boxed{6}\boxed{1}$J
47k Ω → 47×10^3 → 473 ········· RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
0.5 Ω → 0R5 ········· RN2H$\boxed{0}\boxed{R}\boxed{5}$K
1 Ω → 010 ········· RS1P$\boxed{0}\boxed{1}\boxed{0}$K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562×10^1 → 5621 ········· RN1/4SR$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F

10.1 CONTRAST OF MISCELLANEOUS PARTS

The PD−M600/KU and KC types are the same as the PD−M700/KU/CA type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PD−M700 /KU/CA type	PD−M600 /KU type	PD−M600 /KC type	
⚠ ◉	Main board assembly	PWZ1382	PWZ1391	PWZ1391	
◉	Function board assembly	PWZ1386	PWZ1387	PWZ1387	
	Subcode board assembly	Non supply	Non supply	• • • • •	
	Display window	PAM1193	PAM1192	PAM1192	
	Front panel	PAN1096	PAN1095	PAN1095	
◉	D-OUT SW board assembly	PWZ1388	• • • • •	• • • • •	
	Packing case	PHG1209	PHG1208	PHG1180	For packing
	Leg (B)	PNW1327	• • • • •	• • • • •	
	Leg (A)	• • • • •	PNW1326	PNW1326	
	Operating instructions (English)	PRB1043	PRB1042	• • • • •	
	Operating instructions (English/French/German/Italian)	• • • • •	• • • • •	PRE1044	
⚠	Power transformer (AC120V)	PTT1079	PTT1062	PTT1062	
	Remote control unit	PWW1015	PWW1020	PWW1020	

MAIN BOARD ASSEMBLY (PWZ1391)

The main board assembly (PWZ1391) is the same as the main board assebly (PWZ1382) with the exception of the following sections.

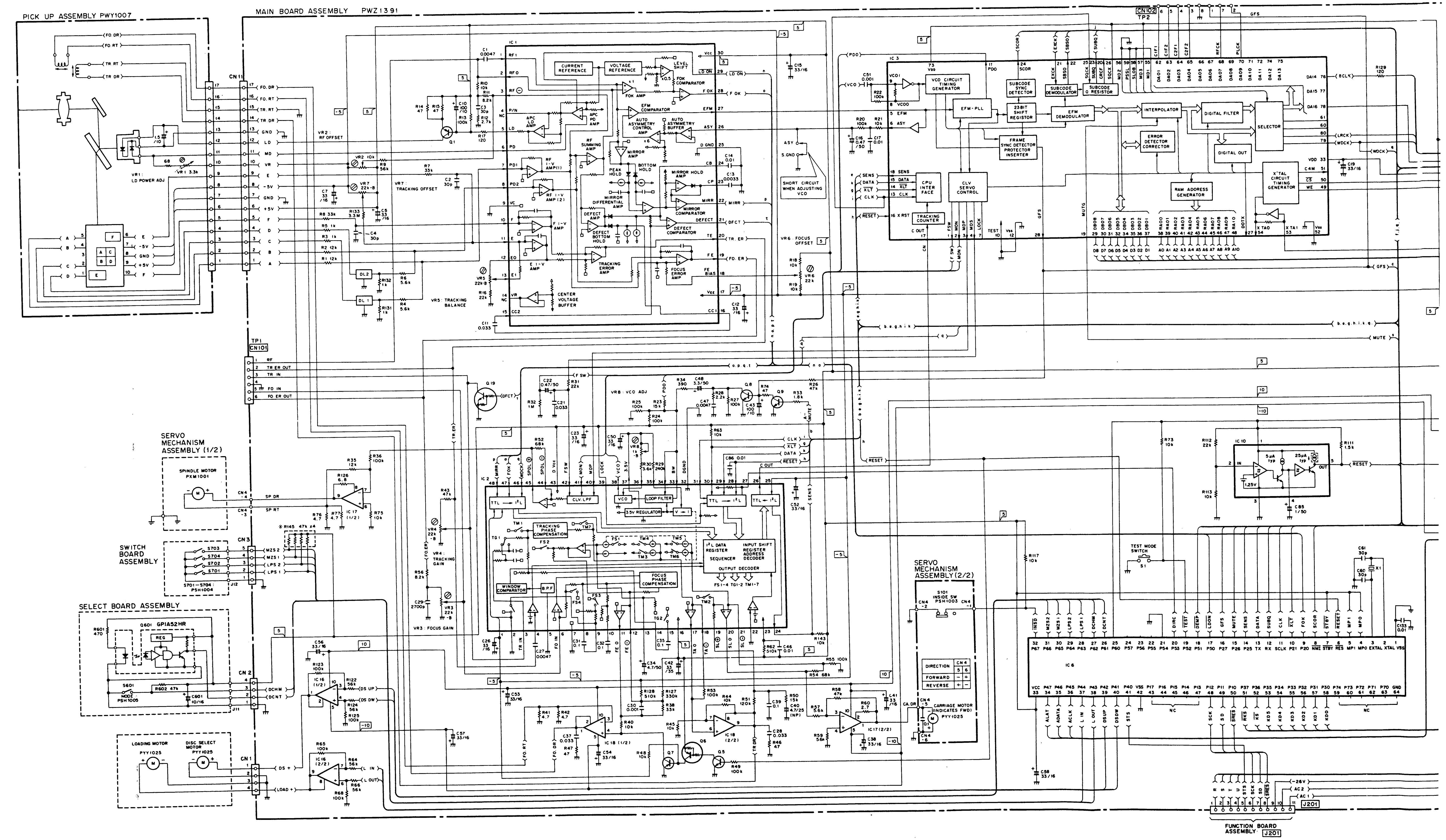
Mark	Symbol & Description	Part No.		Remarks
		PWZ1382	PWZ1391	
★★	IC13	NJM78M12FA	NJM78L12A	
★★	IC14	NJM79M12FA	NJM79L12A	
★★	IC20	TC74HCU04P	• • • • •	
★★	IC21	NJM78M05FA	• • • • •	
★★	IC22	NJM79M05FA	• • • • •	
★★	IC7,IC8	PCM56P-J	PCM56P	
★★	IC19	NJM78L05A	• • • • •	
★★	IC24,IC25	NJM5532DD	M5218P	
★★	IC28	• • • • •	PD0034	
★★	IC29	YM3414	• • • • •	
★★	Q24	DTC124ES	• • • • •	
★★	Q25	• • • • •	2SC3732	
★★	Q26,Q27	2SJ104	• • • • •	
★★	Q28,Q29	2SK364	• • • • •	
★	D13 – D16	1SS254	• • • • •	
	R109,R110	RD1/6PM102J	RD1/6PM822J	
	R93.R94,R144,R167	• • • • •	RD1/6PM102J	
	R99,R100	• • • • •	RD1/6PM103J	
	R114	RD1/6PM105J	• • • • •	
	R142	RD1/6PM121J	• • • • •	
	R101,R102	• • • • •	RD1/6PM182J	
	R147,R148	RD1/6PM391J	• • • • •	
	R150	RD1/6PM103J	• • • • •	
	R141	RD1/6PM244J	• • • • •	
	R146	• • • • •	RD1/6PM391J	
	R151	RD1/6PM102J	• • • • •	
	R152,R153	RD1/6PM750J	• • • • •	
	R130	RD1/6PM391J	RD1/6PM121J	
	R161	• • • • •	RD1/6PM121J	
	R69	• • • • •	RD1/6PM221J	
	R154	RD1/6PM822J	• • • • •	
	C64	• • • • •	CCCCH100D50	
	C96	CCCCH100D50	CCCCH270J50	
	C165	• • • • •	CCCCH330J50	
	C95	CCCCH070D50	CCCCH270J50	
	C151	CCCCH100D50	• • • • •	
	C97	CCCCH330J50	• • • • •	
	C156	CCCSL101J50	• • • • •	
	C108,C109	CEAS102M16	• • • • •	
	C175,C176	CKDYF103Z50	• • • • •	
	C102,C103	CEAS222M16	CEAS102M10	
	C106,C107	CEAS102M25	CEAS102M16	
	C89,C90,C93,C94	CEAS470M50	CEAS220M50	
	C100,C101	CEAS332M25	CEAS220M16	
	C58	• • • • •	CEAS330M16	
	C55,C152,C155,C158	CEAS330M16	• • • • •	
	C153,C154,C157	CKCYF103Z50	• • • • •	
	C75,C76	CQMA821J50	CQMA102J50	
	C73,C74	CQMA562J50	CQMA472J50	
	C77,C78	CQMA153J50	CQMA332J50	
	C121,C122	CQSF102J50	CQSA102J50	
	C59 (0.47F/5.5V)	PCH1062	• • • • •	
	L2 Axial inductor	LAU010K	• • • • •	
	L1 Pulse transformer	PTL1003	• • • • •	
★	X3 Crystal resonator	PSS1001	PSS-012	
	JA1 2P pin jack (OUTPUT)	PKB1011	PKB1010	
	JA5 1P pin jack (DIGITAL OUT)	PKB1004	• • • • •	
	JA6 Optical digital output terminal	TOTX172	• • • • •	

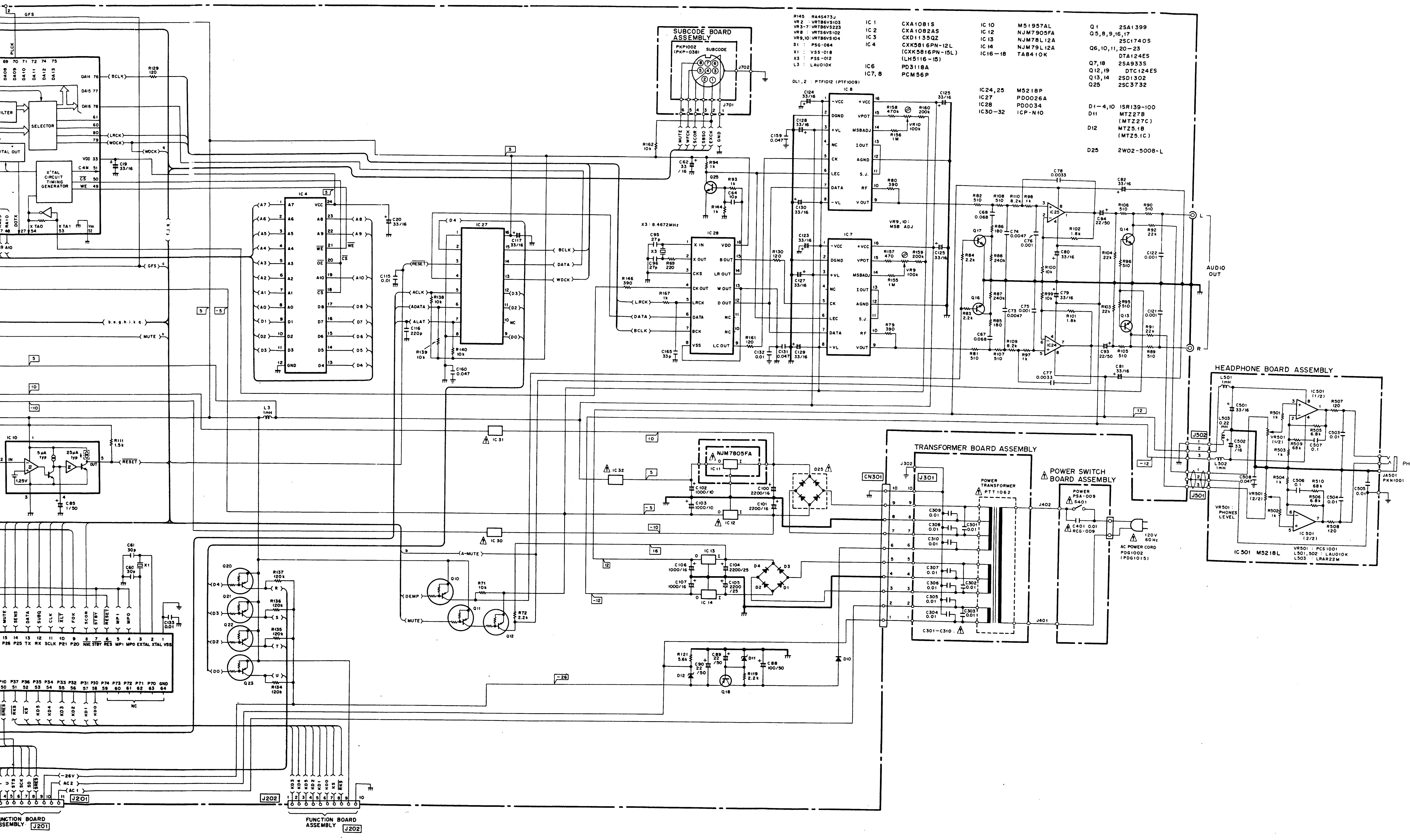
FUNCTION BOARD ASSEMBLY (PWZ1387)

The Function board assembly (PWZ1387) is the same as the Function board assembly (PWZ1386) with the exception of the following sections.

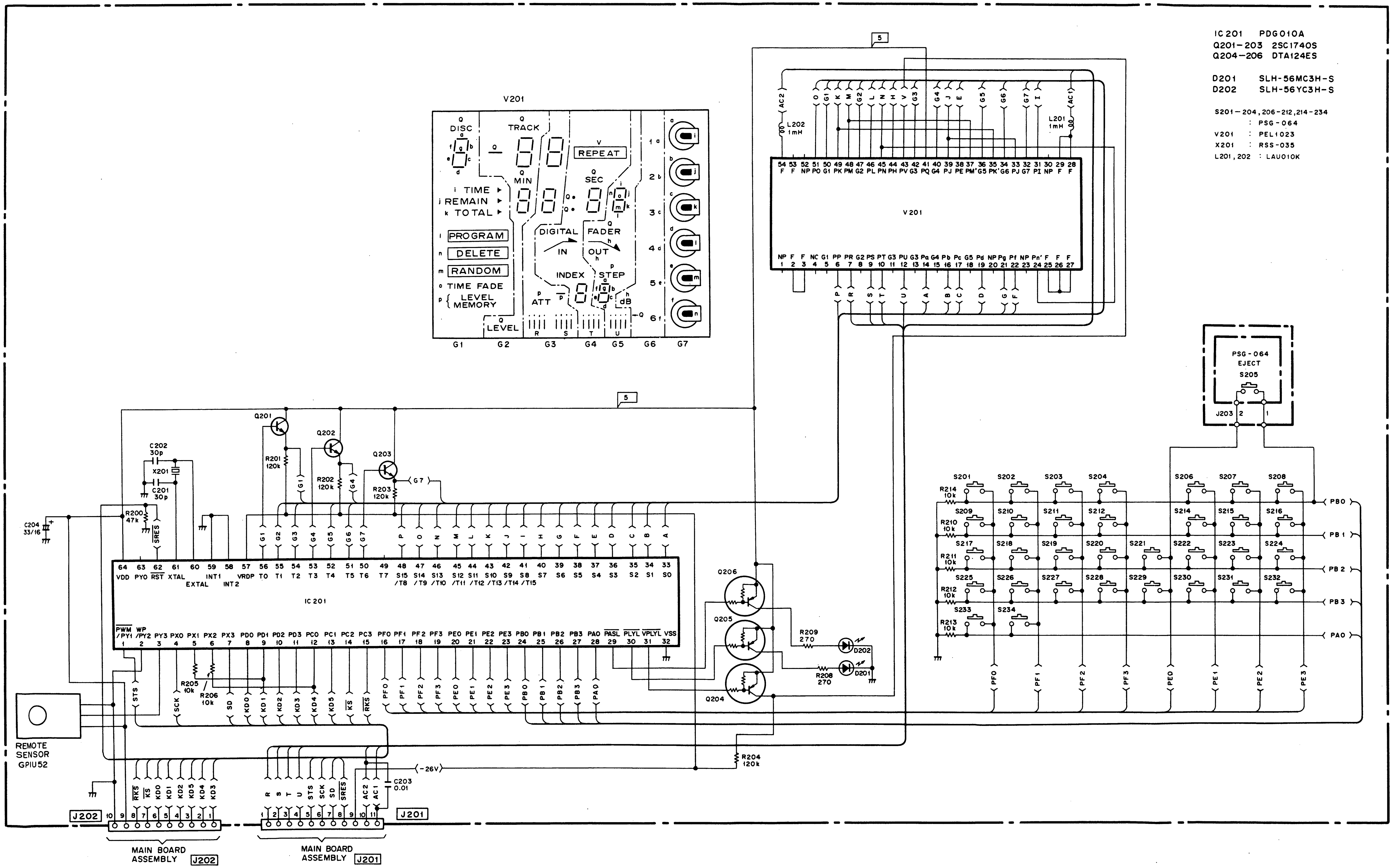
Mark	Symbol & Description	Part No.		Remarks
		PWZ1386	PWZ1387	
★★	S213,S235 Tact switch (REPEAT, TIME)	PSG-064	• • • • •	

10.3 SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
A
B
C
D
PICK UP ASSEMBLY PWY1007
MAIN BOARD ASSEMBLY PWZ1391
VR1 : LD POWER ADJ
CN11
VR2 : RF OFFSET
VR7 : TRACKING OFFSET
VR5 : TRACKING BALANCE
VR6 : FOCUS OFFSET
IC1
CURRENT REFERENCE
VOLTAGE REFERENCE
LEVEL SHIFT
FOK COMPARATOR
FOK AMP
EFM COMPARATOR
AUTO ASYMMETRY CONTROL AMP
AUTO ASYMMETRY BUFFER
APC LD AMP
APC PD AMP
RF SUMMING AMP
RF I-V AMP (1)
RF I-V AMP (2)
MIRROR AMP
PEAK HOLD
BOTTOM HOLD
MIRROR HOLD AMP
MIRROR DIFFERENTIAL AMP
MIRROR COMPARATOR
DEFECT AMP
DEFECT BOTTOM HOLD
DEFECT COMPARATOR
F I-V AMP
E I-V AMP
TRACKING ERROR AMP
FOCUS ERROR AMP
CENTER VOLTAGE BUFFER
SHORT CIRCUIT WHEN ADJUSTING VCO
IC3
VCO CIRCUIT TIMING GENERATOR
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
SUBCODE Q RESISTOR
EFM-PLL
23BIT SHIFT REGISTOR
EFM DEMODULATOR
FRAME SYNC DETECTOR PROTECTOR INSERTER
INTERPOLATOR
DIGITAL FILTER
SELECTOR
ERROR DETECTOR CORRECTOR
DIGITAL OUT
CPU INTER FACE
CLV SERVO CONTROL
TRACKING COUNTER
RAM ADDRESS GENERATOR
X'TAL CIRCUIT TIMING GENERATOR
CN102
TP2
TP1
CN101
RF
TR ER OUT
TR IN
FO IN
FO ER OUT
SERVO MECHANISM ASSEMBLY (1/2)
SPINDLE MOTOR PXM1001
IC17 (1/2)
VR8 : VCO ADJ
IC2
CLV LPF
VCO
LOOP FILTER
3.5V REGULATOR
TTL → I²L
TRACKING PHASE COMPENSATION
I²L DATA REGISTER
INPUT SHIFT REGISTER
ADDRESS DECODER
SEQUENCER
OUTPUT DECODER
FS1-4 TG1-2 TM1-7
FOCUS PHASE COMPENSATION
WINDOW COMPARATOR
B.P.F
VR4 : TRACKING GAIN
VR3 : FOCUS GAIN
SWITCH BOARD ASSEMBLY
S701-S704 : PSH1004
SELECT BOARD ASSEMBLY
Q601 GP1A52HR
REG
S601 MODE PSH1005
CN3
CN2
CN1
IC16 (1/2)
IC16 (2/2)
IC18 (1/2)
IC18 (2/2)
IC17 (2/2)
LOADING MOTOR PYY1025
DISC SELECT MOTOR PYY1025
SERVO MECHANISM ASSEMBLY (2/2)
S101 INSIDE SW PSH1003
DIRECTION
FORWARD
REVERSE
CARRIAGE MOTOR (INDICATES FWD) PYY1025
IC10
TEST MODE SWITCH
IC6
FUNCTION BOARD ASSEMBLY J201


R145 RA4S473J
VR2 : VRTB6VS103
VR3-7 : VRTB6VS223
VR8 : VRTS6VS102
VR9,10 : VRTB6VS104
S1 : PSG-064
X1 : VSS-018
X3 : PSS-012
L3 : LAU010K
DL1, 2 : PTF1012 (PTF1009)
IC1 CXA1081S
IC2 CXA1082AS
IC3 CXD1135QZ
IC4 CXK5816PN-12L (CXK5816PN-15L) (LH5116-15)
IC6 PD3118A
IC7, 8 PCM56P
IC10 M51957AL
IC12 NJM7905FA
IC13 NJM78L12A
IC14 NJM79L12A
IC16−18 TA8410K
IC24,25 M5218P
IC27 PD0026A
IC28 PD0034
IC30−32 ICP-N10
Q1 2SA1399
Q5,8,9,16,17 2SC1740S
Q6,10,11,20−23 DTA124ES
Q7,18 2SA933S
Q12,19 DTC124ES
Q13,14 2SD1302
Q25 2SC3732
D1−4,10 1SR139-100
D11 MTZ27B (MTZ27C)
D12 MTZ5.1B (MTZ5.1C)
D25 2W02-5008-L
SUBCODE BOARD ASSEMBLY
PKP1002 (PKP-038)
SUBCODE
J702
J701
X3 : 8.4672MHz
VR9, 10 : MSB ADJ
AUDIO OUT
L
R
HEADPHONE BOARD ASSEMBLY
PHONES
J502
J501
JA501 PKN1001
VR501 : PHONES LEVEL
IC501 M5218L
VR501 : PCS1001
L501, 502 : LAU010K
L503 : LRAR22M
TRANSFORMER BOARD ASSEMBLY
POWER TRANSFORMER PTT1062
C301−C310 : ⚠
POWER SWITCH BOARD ASSEMBLY
POWER PSA-009 S401
C401 0.01 RCG-009
AC POWER CORD PDG1002 (PDG1015)
120V 60Hz
CN301
J301
J302
J402
J401
NJM7805FA
IC11
IC12
IC13
IC14
IC31
IC32
IC30
IC4
IC27
IC28
IC7
IC8
IC10
IC24
IC25
X'TAL CIRCUIT TIMING GENERATOR
SELECTOR
FUNCTION BOARD ASSEMBLY J201
FUNCTION BOARD ASSEMBLY J202
J201
J202
A
B
C
D

FUNCTION BOARD ASSEMBLY PWZ1387


IC201 PDG010A
Q201-203 2SC1740S
Q204-206 DTA124ES
D201 SLH-56MC3H-S
D202 SLH-56YC3H-S
S201-204,206-212,214-234 : PSG-064
V201 : PEL1023
X201 : RSS-035
L201,202 : LAU010K
V201
DISC
TRACK
REPEAT
MIN
SEC
TIME
REMAIN
TOTAL
PROGRAM
DELETE
RANDOM
TIME FADE
LEVEL MEMORY
DIGITAL IN
FADER OUT
INDEX
STEP
ATT
dB
LEVEL
G1 G2 G3 G4 G5 G6 G7
L202 1mH
L201 1mH
IC201
Q201
Q202
Q203
Q204
Q205
Q206
C202 30p
X201
C201 30p
C204 33/16
R200 47k
R201 120k
R202 120k
R203 120k
R204 120k
R205 10k
R206 10k
R208 270
R209 270
D201
D202
C203 0.01
-26V
PSG-064 EJECT S205
J203
S201 S202 S203 S204 S206 S207 S208
S209 S210 S211 S212 S214 S215 S216
S217 S218 S219 S220 S221 S222 S223 S224
S225 S226 S227 S228 S229 S230 S231 S232
S233 S234
R210 10k
R211 10k
R212 10k
R213 10k
R214 10k
PB0 PB1 PB2 PB3 PA0
PF0 PF1 PF2 PF3 PE0 PE1 PE2 PE3
REMOTE SENSOR GP1U52
J202
J201
MAIN BOARD ASSEMBLY J202
MAIN BOARD ASSEMBLY J201

10.4 REM

NOTES :
- Parts withou
- The ⚠ mark
importance o
replacing, be
- For your part
with the marl
★★ GENERA
This classifica
depends on r
- Parts marked
time may be

10.4.1 Par

Mark	No.
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18
	19
	51

10.4.2 ELI

SEMICONI

Mark	Symb
★★	IC1
★★	IC3
★★	Q1
★★	Q2
★	D1

SWITCH

Mark	Symb
★★	S1 T

CAPACITC

Mark	Symb
	C1 (
	C2 (
	C3 (
	C4 (
	C5 (

10.4 REMOTE CONTROL UNIT

NOTES :

- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

10.4.1 Parts List of Remote control unit

Mark	No.	Part No.	Description
	1	PAM1157	Filter
	2	PAM1158	Window
	3	PAN1098	Name plate
	4	PEB1080	Rubber switch
	5	PNB1162	Fook
	6	PNW1372	Case (T)
	7	PNW1316	Case (B)
	8	PNW1317	Battery case
	9	PNW1428	Frame
	10	CTZ20P080FZK	Screw
	11	CTZ20P140FZK	Screw
	12	PTZ20P050FMC	Screw
	13	PBK1047	Terminal
	14	PBK1048	Terminal
	15	PBK1049	Terminal
	16	PBK1050	Terminal
	17	PBE1092	Connector
	18	PRW1020	Label
	19	PCX1017	LCD
	51		Remote control board assembly

10.4.2 ELECTRICAL PARTS LIST

SEMICONDUCTORS

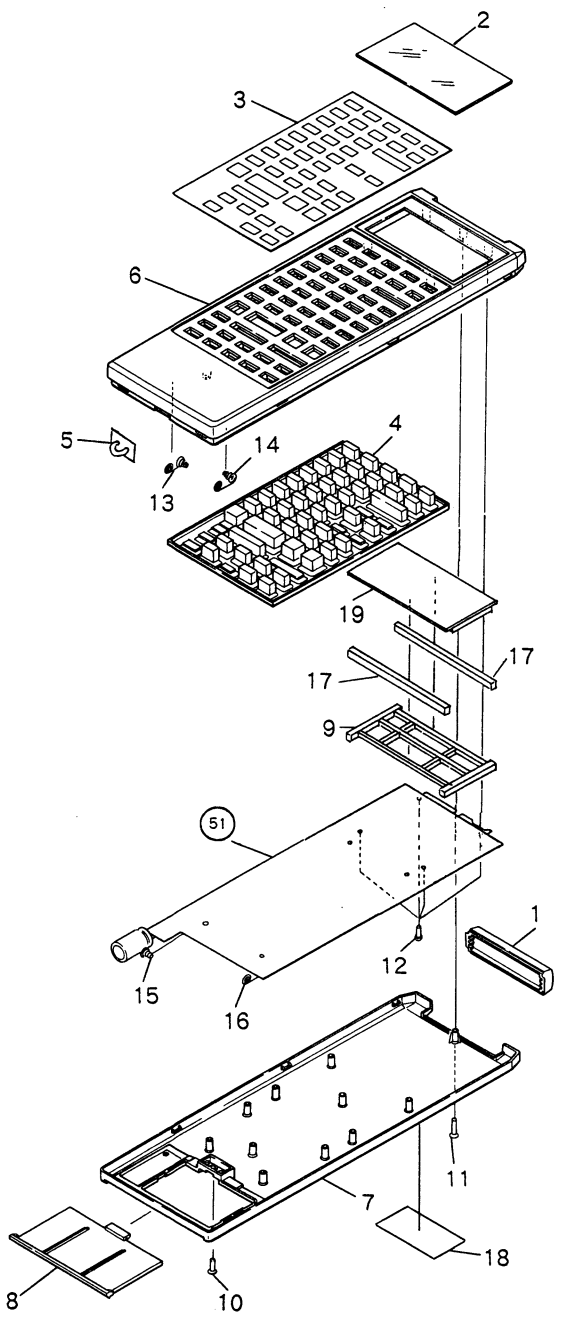
Mark	Symbol & Description	Part No.
★★	IC1	PD5071
★★	IC3	MN1280P
★★	Q1	2SA1162 (2SA1235)
★★	Q2	2SC3265 (2SC3440) (2SD596)
★	D1	SE303A-Y (LD271E317) (TLN111)

SWITCH

Mark	Symbol & Description	Part No.
★★	S1 Tact switch	PSG1004

CAPACITORS

Mark	Symbol & Description	Part No.
	C1 (0.047F)	PCH1071
	C2 (47μF/10V)	CEAS470M10
	C3 (47pF)	PCH1068
	C4 (33pF)	PCH1069
	C5 (0.01μF)	PCH1070



RESISTORS

Mark	Symbol & Description	Part No.
	R1 (7.5Ω)	PCN1017
	R2 (330Ω)	PCN1018
	R5 (1kΩ)	PCN1019
	R3,R8 – R10 (100kΩ)	PCN1020
	R4,R6 (330kΩ)	PCN1021
	R7 (1MΩ)	PCN1022
	R11 (33kΩ)	PCN1023

OTHERS

Mark	Symbol & Description	Part No.
	X1 Crystal resonator	PSS1003
	V1 LCD	PCX1017
	J1,J2	PCN1016

11. SPECIFICATIONS

1. General

Type........................Compact disc digital audio system
Usable discs..Compact Disc
Signal format ....Sampling frequency: 44.1 kHz
Sampling bit number: 16 bit linear
Power requirements
European models ....AC 220 V, 50/60 Hz
U.K., Australian models.........AC 240 V, 50/60 Hz
U.S., Canadian models................AC 120 V, 60 Hz
Other models.............AC 110/120—127/220/240 V
(switchable) 50/60 Hz
Power consumption
European, U.K., Australian,
U.S., Canadian models .... 18 W
Others models .... 18 W
Operating temperature .... +5 °C — +35 °C
Weight .... 5.4 kg (11 lb 15 oz)
External dimensions .. 420(W) x 315(D) x 109(H) mm
16-9/16(W) x 12-13/32(D) x 4-9/32(H) in

2. Audio section

Frequency response . 4 Hz - 20 kHz (±0.5 dB)(EIAJ)
S/N ratio .... more than 104 dB (EIAJ)
Dynamic range .... more than 96 dB (EIAJ)
Channel separation .... more than 100 dB (EIAJ)
Harmonic distortion .... less than 0.003% (EIAJ)
Output voltage .... 2.2 V ±0.3 V (EIAJ)
Wow and flutter...........less than (±0.001 %W.PEAK)
(below measurable level)(EIAJ)
Channels..2-channel (stereo)

3. Output Terminal

Optical digital output terminal
Coaxial digital output terminal
Audio line output
Headphone jack (with volume control)
Subcode output terminal (U.S. model only)

4. Functions

Number of discs to be stored — maximum 6.

Basic operation keys

- PLAY, PAUSE, STOP

Search function

- Disc selection (6 keys)
- Track selection (10 keys)
- Manual search
- Track search
- Index search

Programming

- Maximum 32 steps
- Pause
- Direct programming
- Program check/Correction
- Program clear (single track or all tracks)

Repeat functions

- All discs repeat
- Program repeat
- 1 disc repeat (with program)
- Track repeat (with program)

Random Play

- Random play (repeat also available)
- Program random play (repeat also available)
- Delete random play (repeat also available)

Switching display

- Time consumed, remaining time, and total time

Timer Play functions

Possible in normal, program, and delete random modes.

Digital Level Controller

Volume control can be done with the player and the remote control unit.

One-touch fade

Fade-in and fade-out possible.

Time fade editing

Fade-out with part specification is possible in all modes (normal, program, random, delete random).

ATT level memory

Volume level is adjustable for all six discs.

Memory back up

Remote control unit for program transmission

- Enables program transmission from remote control unit to player.
- LCD display (Includes title and data entry.)
- Transmission indicator
- Battery indicator
- Memory backup function

5. Display

FL tube display

- Passing time display (min, sec)
- Remaining time display
- Total time display
- Disc number, track number, index number
- Program step number
- Program indicator
- Repeat indicator
- Random play indicator
- ATT level display
- ATT level memory display
- Fade-in and fade-out display
- Time fade indicator
- Delete indicator
- Accumulated program time display

Main unit

- Play LED, Pause LED

6. Accessories

- Remote control unit...1
- Size AA (R6) dry batteries 3
- Six-compact-disc magazine.......................................1
- Single-compact-disc magazine 1
- Output cable...1
- Operating instructions...1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Compact Disc Players with mark and the magazines with the same mark are compatible.

9 8 7 6 5 4

A

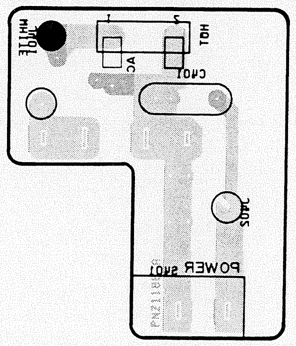
B

C

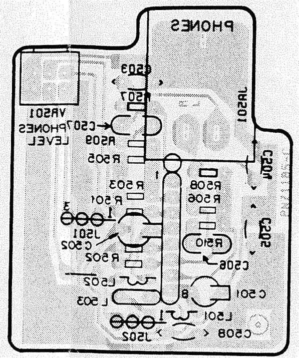
D

This P.C.B. connection diagram is viewed from the foil side.

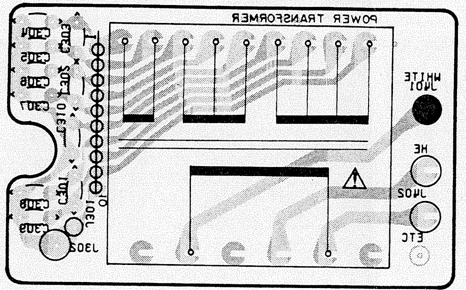
POWER SWITCH BOARD ASSEMBLY

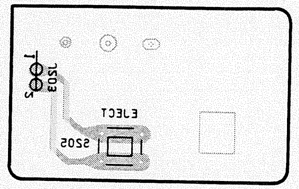

POWER SW01
AC
HOT
WHITE

HEADPHONE BOARD ASSEMBLY

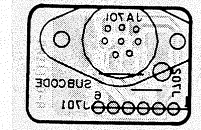

PHONES
JA501
VR501
PHONES LEVEL

TRANSFORMER BOARD ASSEMBLY

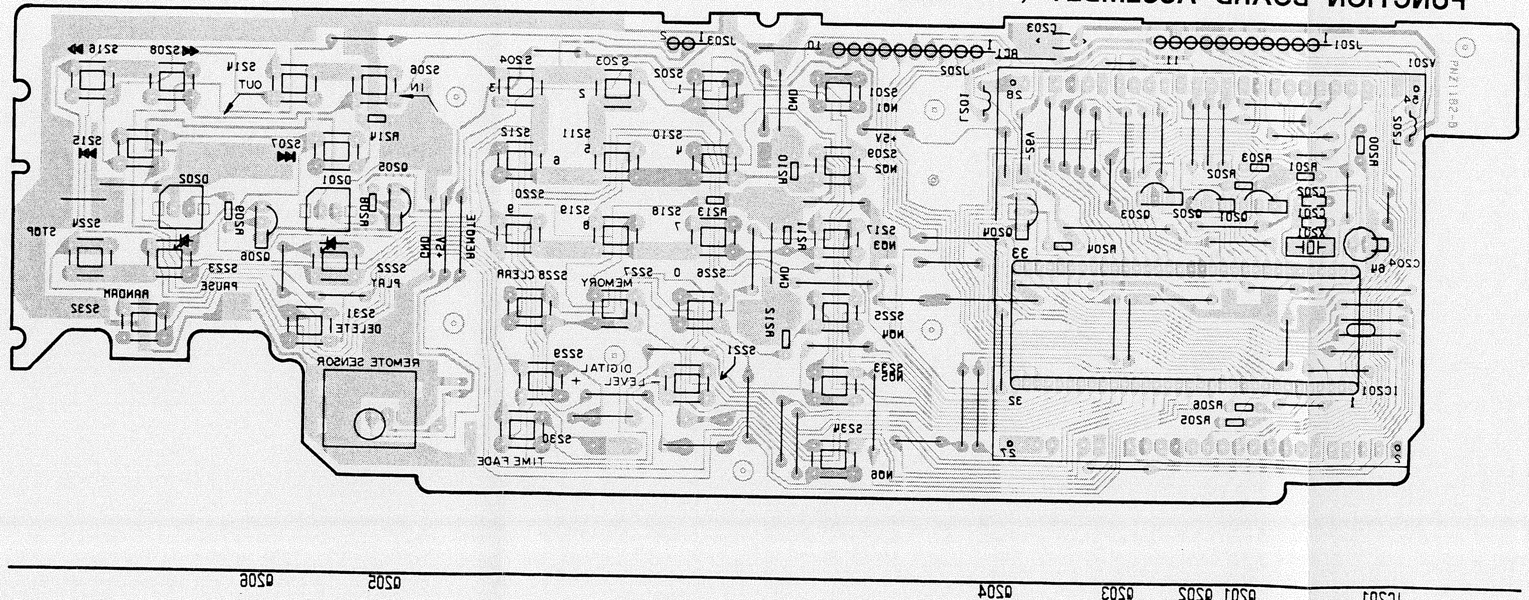

POWER TRANSFORMER
WHITE

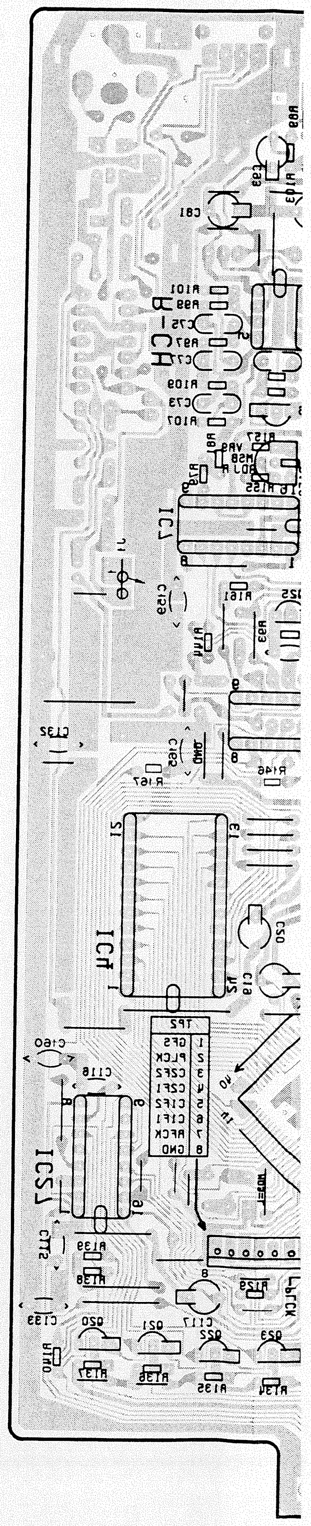


SUBCODE BOARD ASSEMBLY

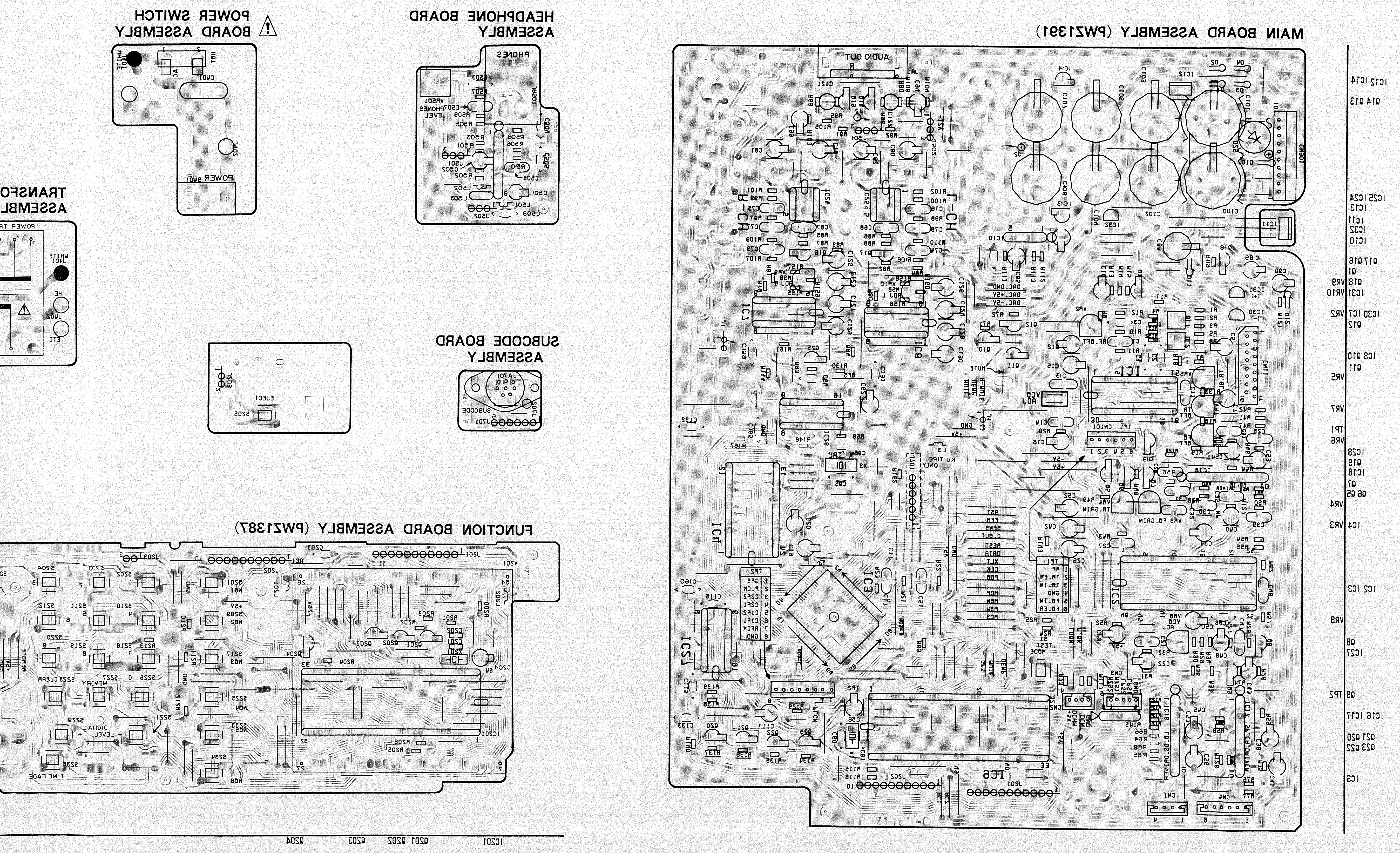

SUBCODE
JA701

FUNCTION BOARD ASSEMBLY (PW21387)


STOP
RANDOM
PAUSE
PLAY
DELETE
REMOTE SENSOR
CLEAR
MEMORY
DIGITAL LEVEL
TIME FADE
IC201
Q201 Q202 Q203 Q204 Q205 Q206


IC71
IC21
L-CH
R-CH

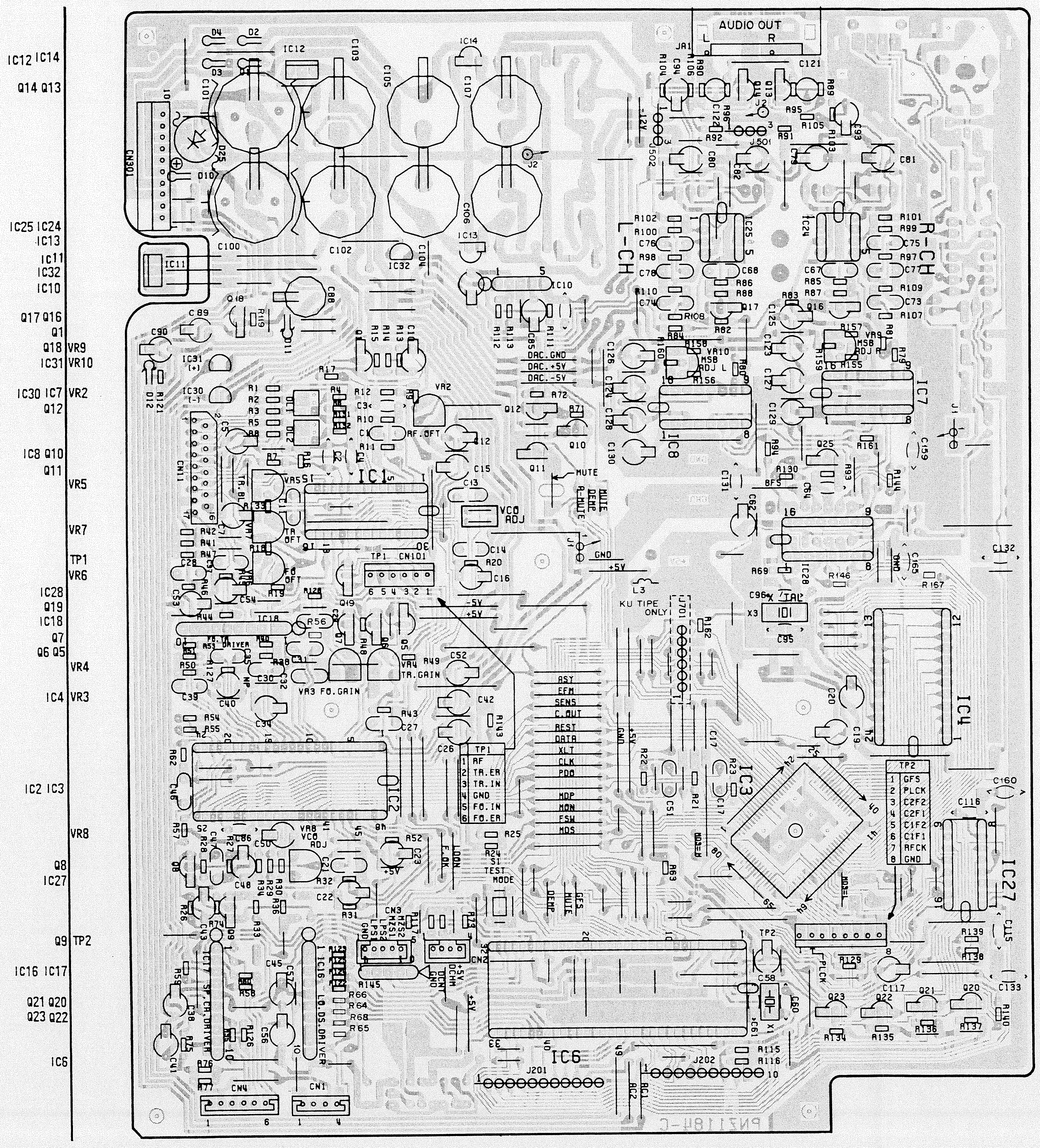
9 8 7 6 5 4


POWER SWITCH BOARD ASSEMBLY
HEADPHONE BOARD ASSEMBLY
MAIN BOARD ASSEMBLY (PWZ1391)
TRANSFO
ASSEMBL
SUBCODE BOARD ASSEMBLY
FUNCTION BOARD ASSEMBLY (PWZ1387)
AUDIO OUT
PHONES
POWER
EJECT
CN301
IC1
IC3
IC5
IC6
IC21
IC201
PWZ1184-C

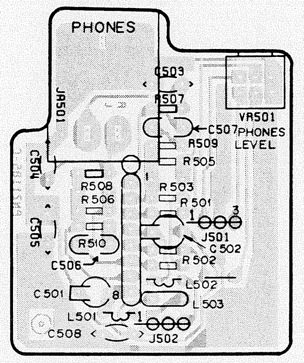
10.2 P.C. BOARDS PATTERN

A

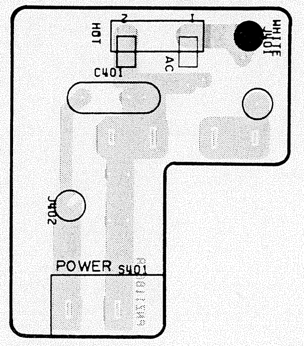
MAIN BOARD ASSEMBLY (PWZ1391)


AUDIO OUT
L
R
IC12 IC14
Q14 Q13
IC25 IC24
IC13
IC11
IC32
IC10
Q17 Q16
Q1
Q18 VR9
IC31 VR10
IC30 IC7 VR2
Q12
IC8 Q10
Q11
VR5
VR7
TP1
VR6
IC28
Q19
IC18
Q7
Q6 Q5
VR4
IC4 VR3
IC2 IC3
VR8
Q8
IC27
Q9 TP2
IC16 IC17
Q21 Q20
Q23 Q22
IC6
CN101
IC1
IC3
IC4
IC6
IC7
IC8
IC27
L-CH
R-CH
VCO ADJ
RF.OFT
MUTE
TR.GAIN
FO.GAIN
KU TIPE ONLY
TEST MODE
TP1
RF
TR.ER
TR.IN
GND
FO.IN
FO.ER
TP2
GFS
PLCK
C2F2
C2F1
C1F2
C1F1
RFCK
GND
ASY
EFM
SENS
C.OUT
REST
DATA
XLT
CLK
PDO
MDP
MON
FSW
MDS
DAC.GND
DAC.+5V
DAC.-5V
+5V
-5V
GND
CN1
CN2
CN3
CN4
J201
J202
X1
X3
PN2118H-C

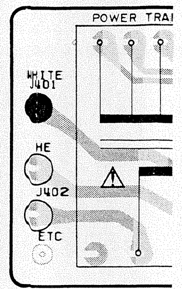
HEADPHONE BOARD ASSEMBLY


PHONES
VR501
PHONES LEVEL
JA501
J501
J502
L501
L502
L503

⚠ POWER SWITCH BOARD ASSEMBLY

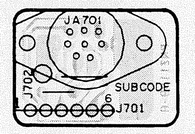

WHITE
AC
C401
J402
POWER
S401

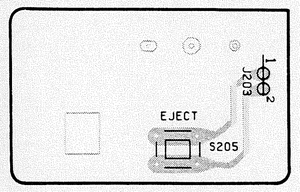
TRANSFOR
ASSEMBLY


POWER TRA
WHITE
J401
HE
J402
ETC

B

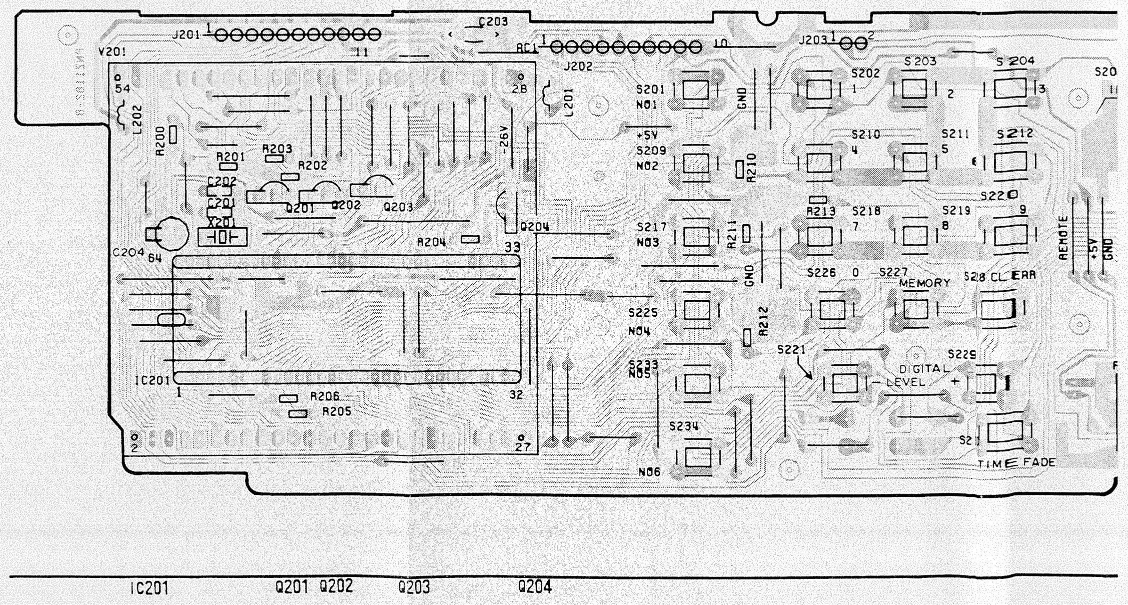
SUBCODE BOARD ASSEMBLY


JA701
J702
SUBCODE
J701

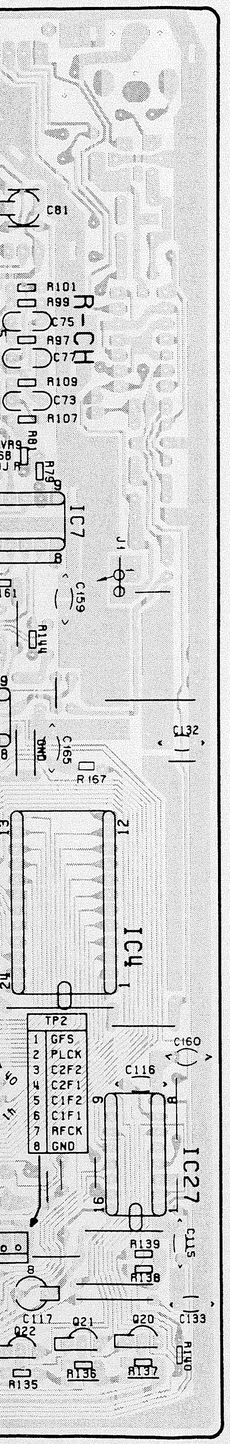

J203
EJECT
S205

C

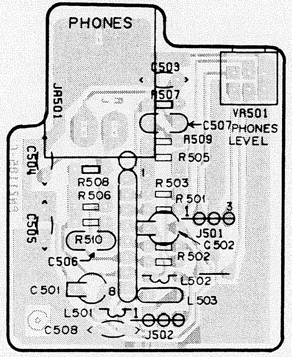
FUNCTION BOARD ASSEMBLY (PWZ1387)


J201
C203
V201
RC1
J202
J203
IC201
S201
N01
S202
S203
S204
S209
N02
S210
S211
S212
S217
N03
S218
S219
S225
N04
S226
S227
MEMORY
S228
CLEAR
S233
N05
DIGITAL LEVEL
S234
N06
S221
TIME FADE
REMOTE
+5V
GND
Q201
Q202
Q203
Q204
IC201 Q201 Q202 Q203 Q204

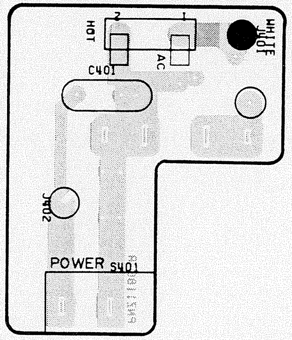
D


C81
R101
R99
R-CH
C75
R97
C77
R109
C73
R107
IC7
C159
R144
C132
C165
R167
IC4
TP2
1 GFS
2 PLCK
3 C2F2
4 C2F1
5 C1F2
6 C1F1
7 RFCK
8 GND
C160
C116
IC27
C115
R139
R138
C117
Q21
Q20
C133
Q22
R136
R137
R135

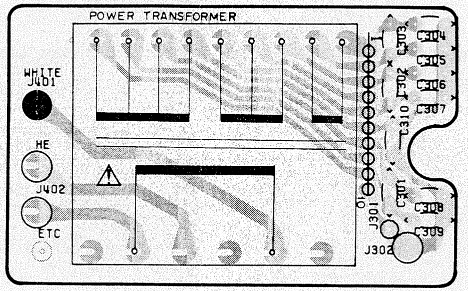
HEADPHONE BOARD ASSEMBLY


PHONES
C503
JA501
R507
VR501
C507 PHONES
R509 LEVEL
R505
C504
R508
R506
R503
R501
C505
J501
C502
R510
R502
C506
L502
C501
L503
L501
C508
J502

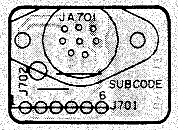
⚠ POWER SWITCH BOARD ASSEMBLY

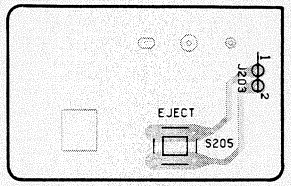

HOT
AC
WHITE
C401
J402
POWER S401

TRANSFORMER BOARD ASSEMBLY

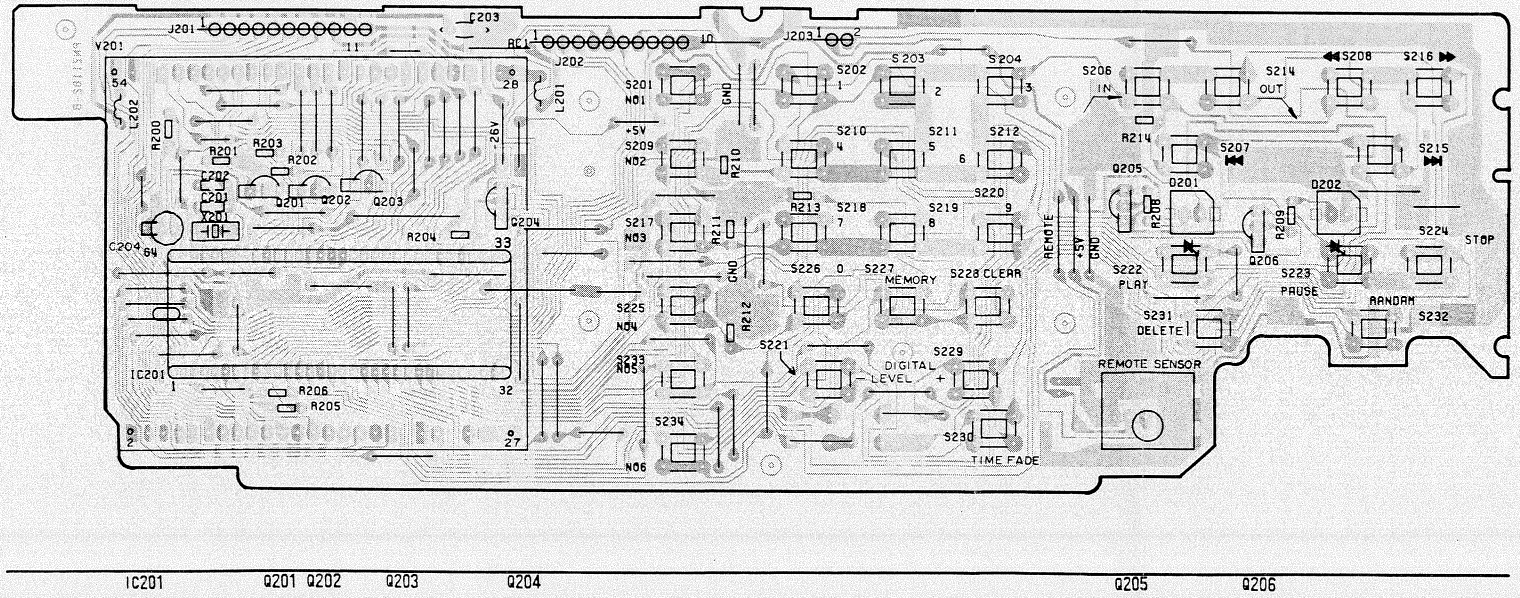

POWER TRANSFORMER
WHITE
J401
HE
J402
ETC
C304
C305
C306
L307
C310
C308
C309
J301
J302

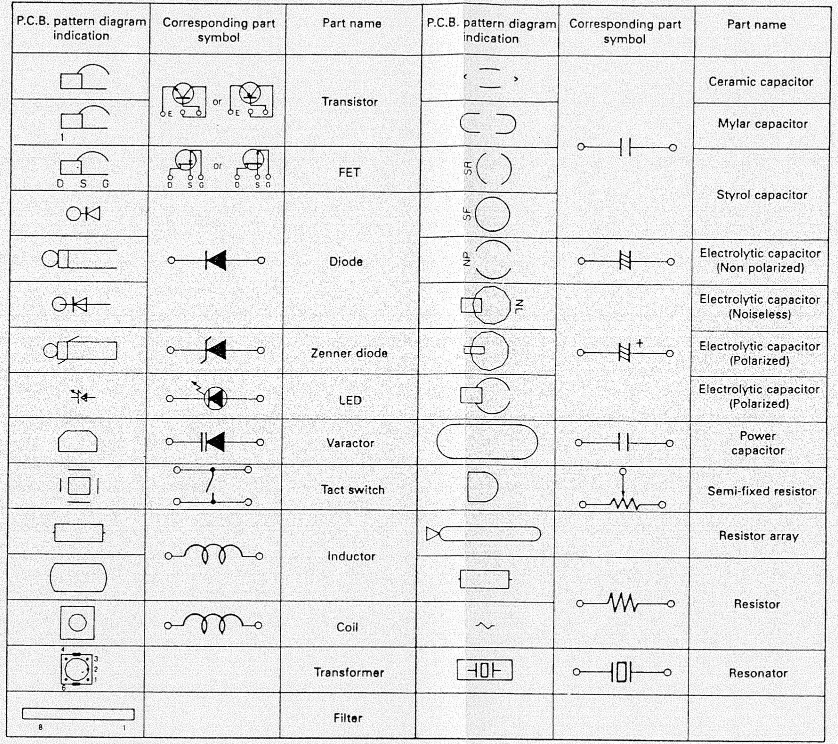
SUBCODE BOARD ASSEMBLY


JA701
J702
SUBCODE
J701


J203
EJECT
S205

FUNCTION BOARD ASSEMBLY (PWZ1387)


J201
C203
V201
RC1
J202
J203
C202
R200
R201
R203
R202
Q201
Q202
Q203
C201
X201
C204
Q204
R204
IC201
R206
R205
S201 NO1
S209 NO2
S217 NO3
S225 NO4
S233 NO5
S234 NO6
+5V
-26V
GND
R210
R211
R212
S202 1
S203 2
S204 3
S210 4
S211 5
S212 6
S213
S218 7
S219 8
S220 9
S226 0
S227 MEMORY
S228 CLEAR
S221
S229
DIGITAL LEVEL
S230 TIME FADE
REMOTE
+5V
GND
S206 IN
S214 OUT
S208
S216
R214
S207
S215
Q205
Q201
Q202
R208
R209
Q206
S222 PLAY
S223 PAUSE
S224 STOP
S231 DELETE
RANDOM
S232
REMOTE SENSOR
IC201
Q201 Q202
Q203
Q204
Q205
Q206



P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
	or	Transistor			Ceramic capacitor
					Mylar capacitor
D S G	or	FET	SR		Styrol capacitor
		Diode	SF		
			NP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Power capacitor
		Tact switch			Semi-fixed resistor
		Inductor			Resistor array
					Resistor
		Coil			
		Transformer			Resonator
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

7. RÉGLAGES

Les réglages pour ce modèle doivent être réalisés dans l'ordre indiqué ci-dessous.

• Réglages et vérifications à effectuer

1. Réglages de l'offset de centrage de piste, de l'offset de focalisation et de l'offset RF.
2. Réglage du niveau RF
3. Vérification de la puissance de sortie de la diode laser (LD)
4. Vérification du verrouillage de focalisation et du verrouillage de moyeu
5. Réglage du réseau
6. Réglage de l'équilibrage de centrage de piste
7. Réglage tangentiel
8. Réglage du gain de focalisation
9. Réglage du gain de centrage de piste
10. Réglage de la fréquence propre du VCO
11. Méthode de contrôle de la caractéristique S (erreur de focalisation)

• Matériel de mesure

1. Oscilloscope double trace
2. Appareil de mesure pour puissance laser
3. Disque d'essai (YEDS7)
4. Filtre de réglage pour équilibrage de centrage de piste
5. Filtre de réglage pour gain de boucle
6. Générateur de signal
7. Fréquencemètre
8. Outillage général divers

• Mode d'essai

Méthodes de réglage et d'annulation du mode d'essai

(1) Pour régler le mode d'essai, placer l'interrupteur d'alimentation (POWER) du lecteur (S401) sur la position de marche (ON) en appuyant sur l'interrupteur de mode d'essai (TEST MODE SWITCH) (S1).

(2) Pour annuler le mode d'essai, amener simplement l'interrupteur d'alimentation (POWER) du lecteur sur la position d'arrêt (OFF).

Les différentes fonctions des touches dans le mode d'essai sont indiquées dans le tableau 7-1.

• Points de réglage

VR1: Puissance laser
VR7: Décalage de centrage de piste (TRK.OFS)
VR3: Gain de focalisation (FCS.GAN)
VR4: Gain de centrage de piste (TRK.GAN)
VR5: Equilibrage de centrage de piste (TRK.BAL)
VR6: Décalage de focalisation (FCS.OFS)
VR8: Réglage du VCO (VCO.ADJ)
VR2: Offset RF (RF.OFS)
VR9 : Réglage de MSB (canal droit)
VR10 : Réglage de MSB (canal gauche)

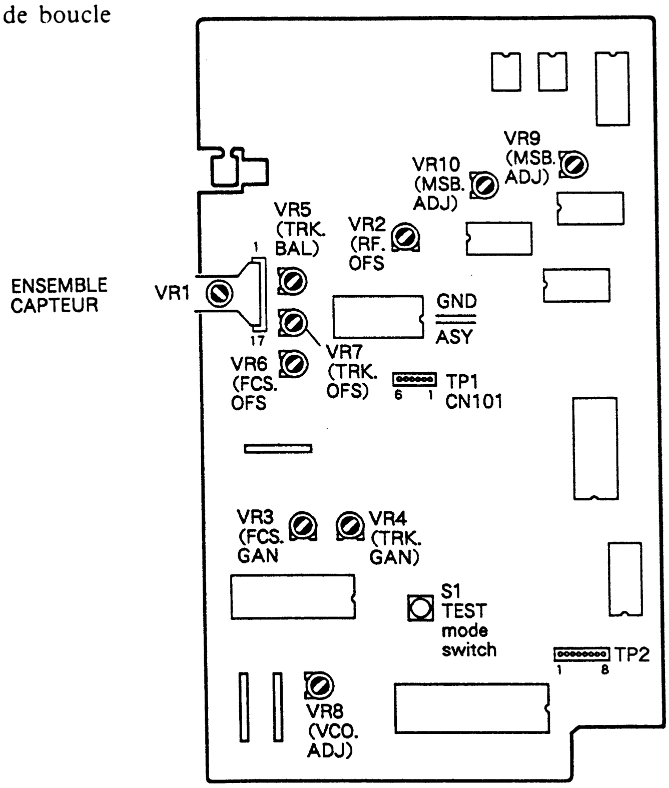


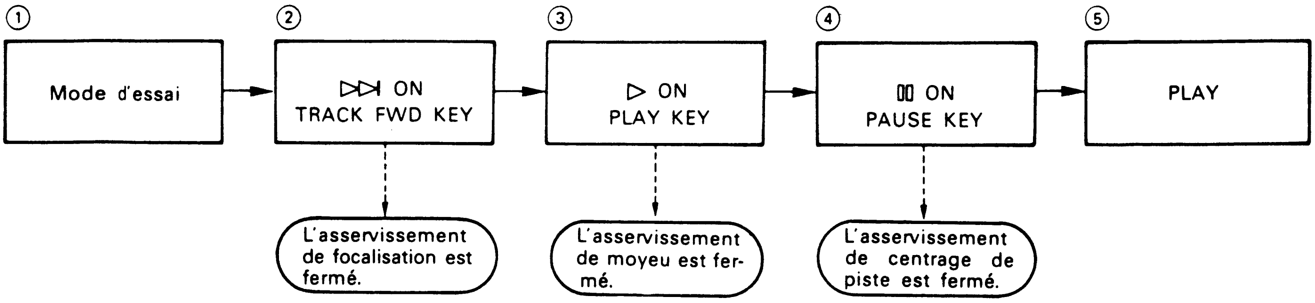
Fig. 7-1 Point de réglage

Dans le mode d'essai (Test Mode), chaque circuit asservi peut être fermé ou ouvert au moyen d'opérations séparées. En conséquence, les asservissements doivent être fermés l'un après l'autre (séquentiellement) pour régler le mode de lecture (PLAY).

Note: Le mode de lecture (PLAY) n'est pas simplement mis en oeuvre par l'enfoncement de la touche PAUSE (▯▯) dans le mode d'essai.

Exemple: Commutation du mode d'arrêt (STOP) au mode de lecture (PLAY).

* Dans le mode d'essai (Test Mode), chaque servo-mécanisme agit séquentiellement.

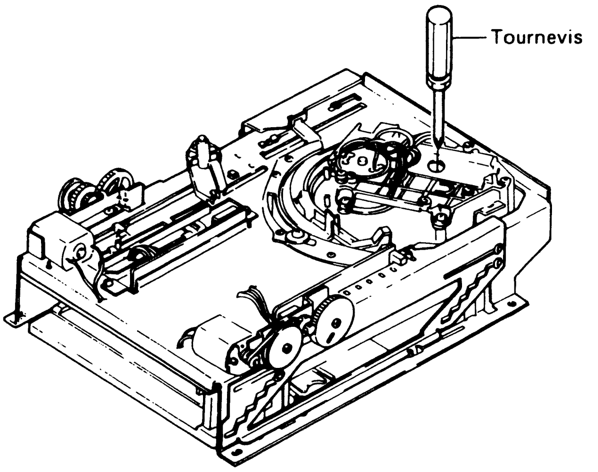
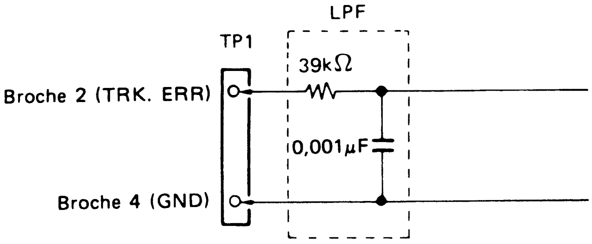

①
Mode d'essai
②
▷▷| ON
TRACK FWD KEY
L'asservissement de focalisation est fermé.
③
▷ ON
PLAY KEY
L'asservissement de moyeu est fermé.
④
▯▯ ON
PAUSE KEY
L'asservissement de centrage de piste est fermé.
⑤
PLAY

- **Fonction des touches dans le mode d'essai (Test Mode)**

Symbole	Désignation de touche	Fonction pendant le mode d'essai	Description
▷▷|	TRACK FWD	Asservissement de focalisation fermé	La diode laser s'allume. Le moteur d'asservissement se déplace vers le haut/bas, puis l'asservissement de focalisation est fermé.
▷	PLAY	Asservissement de moyeu fermé	Le moyeu commence à tourner et l'asservissement est fermé lorsqu'il passe dans le mode CLV-A.
▯▯	PAUSE	Asservissement de centrage de piste ouvert/fermé	Réalise l'opération de bascule. Fermeture de l'asservissement de centrage de piste et passage en mode de lecture (PLAY) en appuyant sur la touche (l'asservissement de focalisation et l'asservissement de moyeu doivent se fermer); le voyant de PAUSE s'allume. L'asservissement de centrage de piste s'ouvre par une nouvelle pression sur la touche.
◁◁	MANUAL SEARCH REV	Le chariot se déplace en arrière (vers le centre du disque).	Le chariot se déplace vers le centre du disque à une vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
▷▷	MANUAL SEARCH FWD	Le chariot se déplace en avant (vers le centre du disque).	Le chariot se déplace vers la fin du disque à la vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
□	STOP	Arrêt	Tous les asservissements sont ouverts
⏏	EJECT	Ejection du magasin de clisque compact	Le magasin du disque compact est éjecté. Néanmois, la tête de lecture ne revient pas sur sa position de repos. De plus, même lorsque le disque est enfermé, la tête de lecture demeure tel quel.

Tableau 7-1

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
1.	**REGLAGES DE L'OFFSET DE CENTRAGE DE PISTE, DE L'OFFSET DE FOCALISATION ET DE L'OFFSET RF**					
						• Régler le mode d'essai (TEST). (Voir page 45.)
				VR5 (TRK.BAL)	45°	• Tourner le potentiomètre VR5 TRK.BAL (équilibrage de centrage de piste) de 45° depuis le centre dans le sens des aiguilles d'une montre.
			TP1 broche 2 (TRK.ERR)	VR7 (TRK.OFS)	0V±50 mV	• Ajuster le potentiomètre VR7 TRK.OFS (décalage de centrage de piste) de façon à ce que la tension à la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 devienne égale à 0V±50 mV.
			TP1 BROCHE 6 (FCS.ERR)	VR6 (FCS.OFS)	Offset de focalisation 0V±50 mV	• Régler VR6 FCS.OFS (offset de focalisation) de manière à ce que la tension de FCS.ERR (erreur de focalisation) relevée sur la broche 6 de TP1 soit de 0V±50 mV.
			TP1 BROCHE 1 (RF OUTPUT)	VR2 (RF.OFS)	Offset RF 100 mV±50 mV	• Régler VR2 RF.OFS (offset HF) de manière à ce que la tension de RF OUTPUT (sortie HF) relevée sur la broche 1 de TP1 soit de 100 mV±50 mV.
2.	**REGLAGE DU NIVEAU RF**					
			TP1 Broche 1 (RF)	VR1 Puissance laser	1,8Vc-c ± 0,1V	• Régler le mode d'essai (TEST). (Voir page 45.) • Reproduire le disque d'essai (TEST) et raccorder la sonde d'un oscilloscope à la broche 1 RF (sortie RF) de TP1 et mesurer la tension C-C de la forme d'onde RF. • Régler la puissance laser de façon que la tension soit de 1,8Vc-c ± 0,1V
3.	**CONTRÔLE DE LA PUISSANCE DE SORTIE DE LA DIODE LASER (LD)**					
					Confirmation: moins de 0,13 mW	• Régler le mode d'essai (TEST). (Voir page 45.) • Appuyer sur la touche de centrage de piste arrière (TRACK FWD) (▷▷|) et enclencher la diode laser (LD). • Placer la capteur de l'instrument destiné à mesurer la puissance laser au dessus de l'objectif et vérifier que la puissance de sortie de la diode laser (LD) est inférieure à 0,13 mW.
4.	**CONTRÔLE DU VERROUILLAGE DE FOCALISATION ET DU VERROUILLAGE DE MOYEU**					
	0,5 V/div.	100 ms/div.	TP1 broche 1 (sortie RF)		Présence de sortie RF Rotation normale	• Mettre en place le disque d'essai (TEST). • Régler le mode d'essai (TEST). (Voir page 45.) • Déplacer la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche [MANUAL SEARCH FWD (▷▷)]. * Cette étape doit absolument être réalisée. • Observer le signal RF à la broche 1 de TP1 (sortie RF) au moyen d'un oscilloscope et vérifier que le signal RF sorte après l'enfoncement de la touche d'avance de piste TRACK FWD (▷▷|). • Appuyer sur la touche de lecture (PLAY) (▷) et s'assurer que le disque tourne en sens normal avec approximativement la vitesse spécifiée (étant près du centre du disque, la vitesse de rotation est d'environ 30 tr/mn), sans anomalie ni inversion du sens de rotation.

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
5.	**RÉGLAGE DE LA MIRE**					
	 Fig. 7-2  LPF TP1 39kΩ 0,001μF Broche 2 (TRK. ERR) Broche 4 (GND) Fig. 7-3					• Régler le mode d'essai (TEST). (Voir page 45.) • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (⊳⊳), de façon à ce que la vis de réglage du réseau de la tête de lecture puisse être vue à travers le trou oval situé à la partie supérieure de l'asservissement. • Introduire un outil pour réseau dans le trou de réglage depuis la partie supérieure du mécanisme, comme illustré à la figure7-2, puis vérifier que la vis de réseau tourne. • Appuyer séquentiellement sur les touches de piste avant TRACK FWD (⊳⊳⊣) et de lecture (PLAY) (⊳), et fermer les asservissements de focalisation et de moyeu. (Ne pas fermer l'asservissement de centrage de piste.) • Observer la forme d'onde à la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope. Introduire alors un filtre de coupure passe-bas 4 kHz. (Figure 7-3)
	0,5 V/div.	5 ms/div.	TP1 Broche 2 TRK.ERR	Réseau Réseau	Point zéro Amplitude maximum	• Faire touner un outil de réseau et rechercher le point zéro. (Photo 7-1) • Tourner ensuite lentement dans **le sens contraire des aiguilles d'une montre** l'outil de réseau depuis le point zéro et l'ajuster sur le point où la forme d'onde (signal d'erreur de centrage de piste) présente une première amplitude maximum. (Voir photo 7-3) Note: Si l'outil de réseau est appuyé avec force, la tête de lecture se déplace vers le centre du disque et le réglage devient difficile à effectuer. • Finalement, s'assurer que le signal d'erreur de centrage de piste (cette fois-ci le filtre de coupure passe-bas à 4 kHz n'est pas introduit) n'a pas beaucoup varié lorsque la tête de lecture est déplacée vers le centre du disque, et aussi que la tension C-C du signal de centrage de piste n'a pas non plus beaucoup varié sur la circonférence extérieure du disque. Lorsque le niveau varie de plus de ±10%, recommencer le réglage en tournant la vis de réseau jusqu'au point d'amplitude d'erreur maximum.

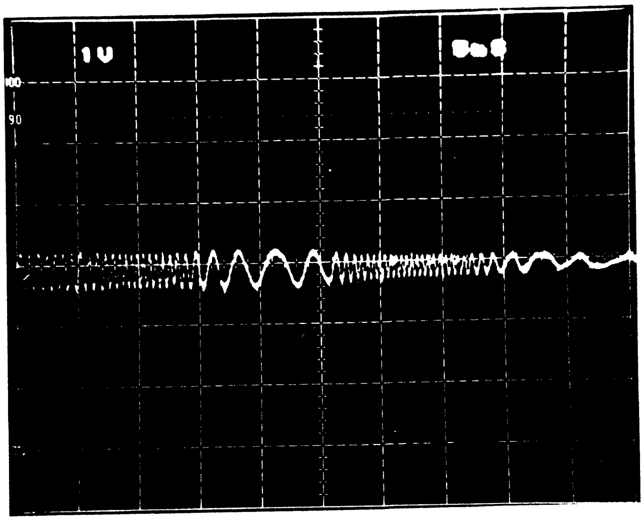


Photo 7-1 Point zéro

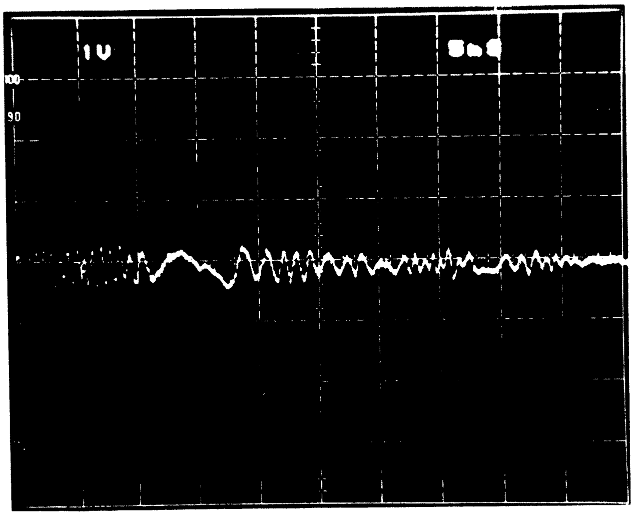


Photo 7-2 Forme d'onde hors du point zéro

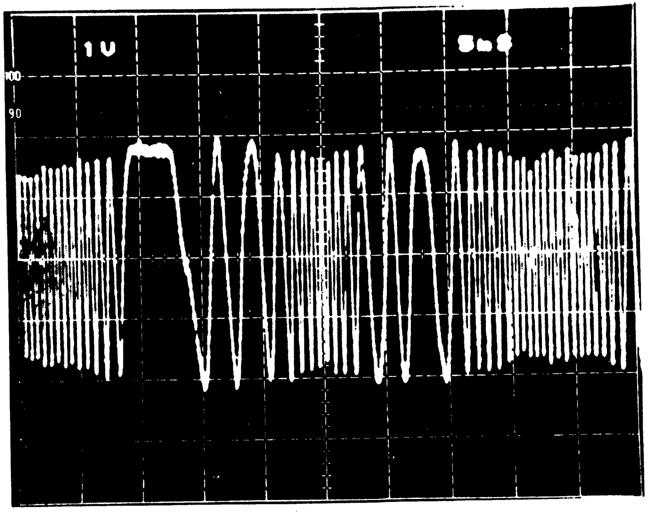


Photo 7-3 Amplitude maximum

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
6.	**RÉGLAGE DE L'ÉQUILIBRAGE DE CENTRAGE DE PISTE**					
	0,5 V/div.	5 ms/div.	TP1 Broche 2 (TRK.ERR)	VR5 (TRK.BAL)	TRK.ERR	• Mettre en place le disque d'essai (TEST). • Régler le mode d'essai (TEST). (Voir page 45.) • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (⊳⊳). • Appuyer sur la touche de piste avant (TRACK FWD) (⊳⊳|) et sur la touche de lecture (PLAY) (⊳) pour faire tourner le disque. • Observer la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope et ajuster au moyen du potentiomètre VR5 TRK.BAL (équilibrage de centrage de piste) de façon à ce que la composante continue de l'erreur de centrage de piste disparaisse. Note :Prendre soln de toujours realiser le réglage du décalage d'errer de centrage de piste lorsque le présent reglage est effectué

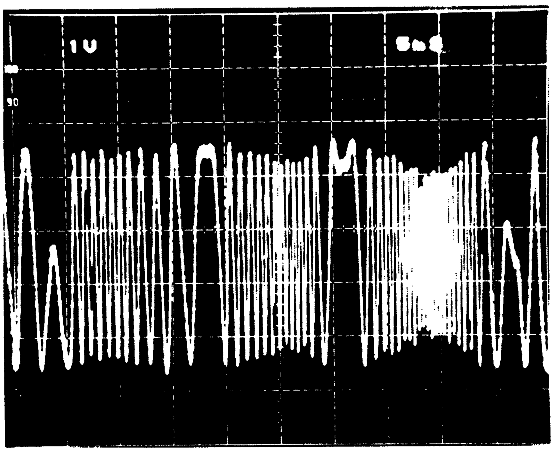


Photo 7-4 Présence de la composante continue

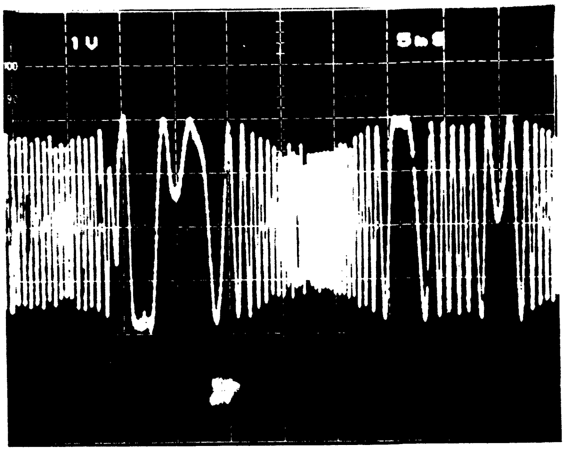
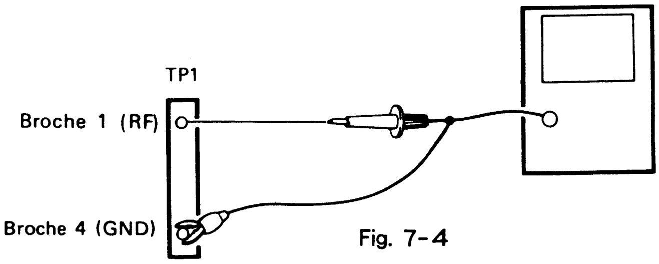
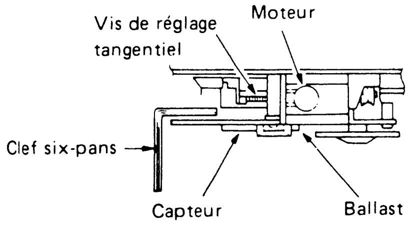


Photo 7-5 Absence de la composante continue

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
7.	**RÉGLAGE TANGENTIEL**					
		200 ns	TP1 Broche 1 (sortie RF)	Vis de réglage tangentiel	Mire Best Eye	• Mettre en place le disque d'essai (TEST) • Régler le mode d'essai (TEST). (Voir page 45.) • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷▷). • Appuyer séquentiellement sur les touches d'avance de piste (TRACK FWD) (▷▷|), de lecture (PLAY) (▷) et de pause (PAUSE) (▯▯), et fermer tous les asservissements. (Le voyant de pause s'allume.) • Observer le signal RF à la broche 1 (sortie RF) de TP1 au moyen d'un oscilloscope et régler au moyen de la vis tangentielle, de façon à ce que la mire Best Eye devienne claire. (Figure 7-4) • Le point de réglage se situe au milieu entre le point ou la mire se détériore en tournant la vis tangentielle dans le sens des aiguilles d'une montre et le point où la mire se détériore en tourant la vis tangentielle dans le sens inverse des aiguilles d'une montre. Comme critère, observer que la forme d'onde globale soit claire et que l'une des formes de losange se situe dans la mire (Photo 7-6); réaliser le réglage en un point optimum où la forme de losange apparaît avec des traits relativement fins.  Fig. 7-4 Note: Pendant le réglage, tenir la clef six-pans vers le haut de facon à ce que le corps de la tête de lecture ne descende pas.


Vis de réglage tangentiel
Moteur
Clef six-pans
Capteur
Ballast

Dans l'illustration ci-dessous, le dessus et le dessous de l'appareil sont en réalité à l'envers.

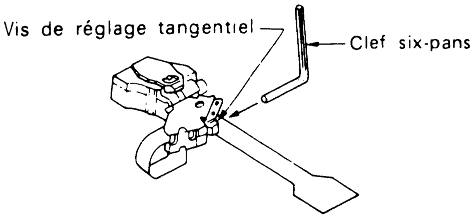

Vis de réglage tangentiel
Clef six-pans

Fig. 7-5 Réglage tangentiel

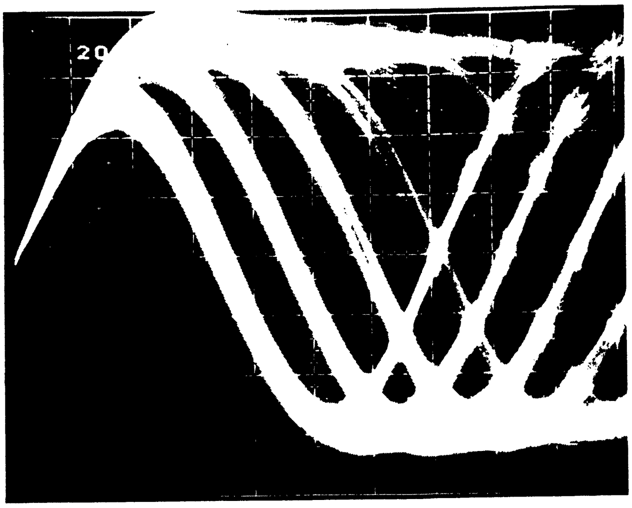


Photo 7-7

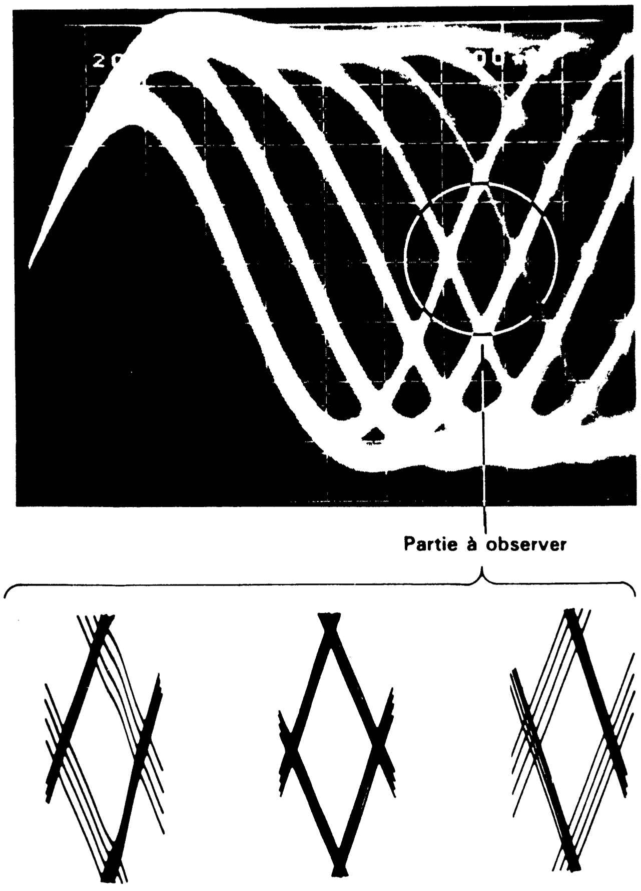

Partie à observer
Pas optimal
Optimal
Pas optimal

Photo 7-6

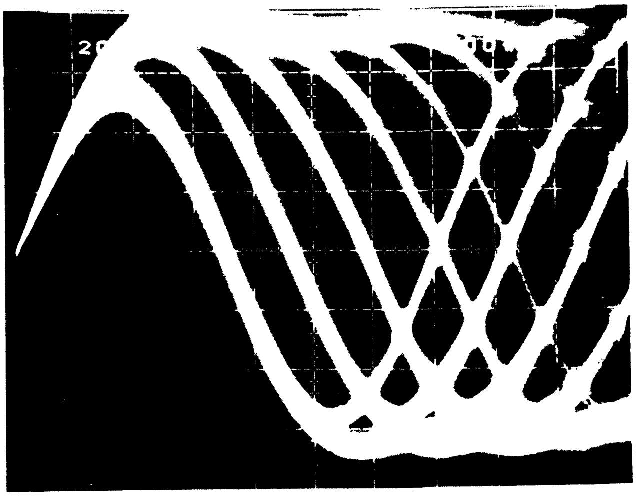


Photo 7-8

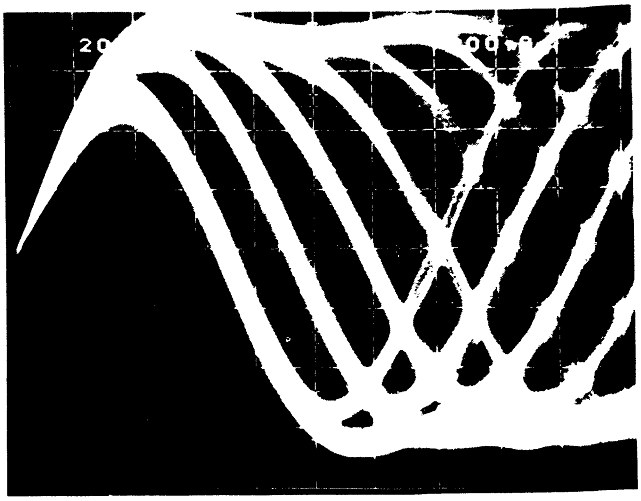
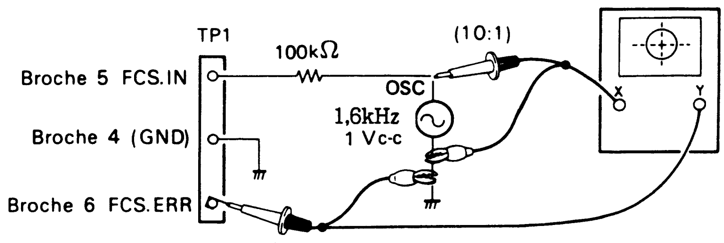


Photo 7-9

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
8.	**RÉGLAGE DU GAIN DE FOCALISATION**					
	20 mV/div. 5 mV/div. Canal 1(X), Canal 2(Y) (Sonde 10:1)		Axe X TP1 Broche 5 (FCS.IN) Axe Y TP1 Broche 6 (FCS.ERR)	VR3 (FCS.GAN)	Différence de phase 90°.	• L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 9-6. • Dans le mode NORMAL, appuyer sur la touche de lecture (PLAY). • Enclencher l'alimentation de l'oscillateur et délivrer un signal de 1,6kHz à 1 Vc-c. Note: (En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation.) • Ajuster le potentiomètre VR3 FCS.GAN (gain de focalisation) de façon à ce que la figure de Lissajou observée sur l'oscilloscope devienne un cercle horizontal (déphasage 90°).  TP1 100kΩ (10:1) Broche 5 FCS.IN OSC 1,6kHz 1 Vc-c Broche 4 (GND) Broche 6 FCS.ERR (10:1) X Y Fig. 7-6

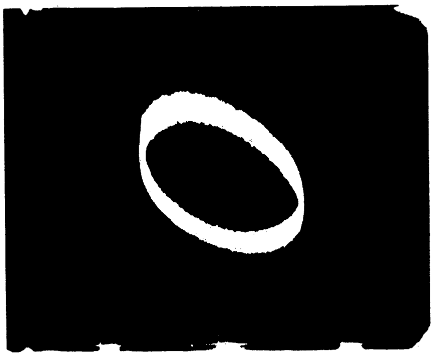


Photo 7-10 Gain élevé

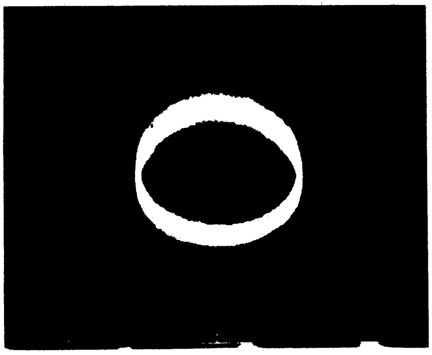


Photo 7-11 Gain optimum

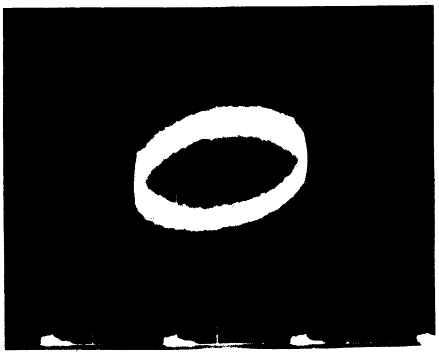
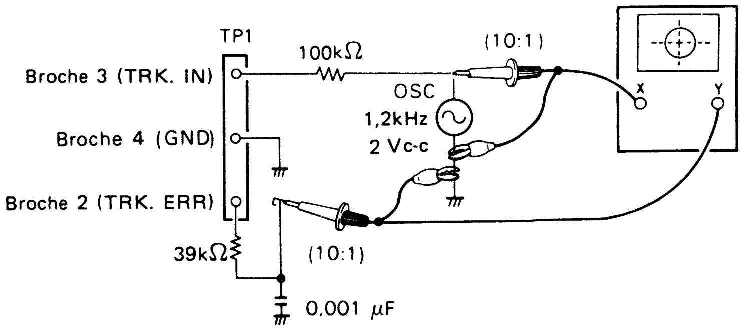


Photo 7-12 Gain réduit

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
9.	**RÉGLAGE DU GAIN DE CENTRAGE DE PISTE**					
	50 mV/div. 5 mV/div. Canal 1 (X), Canal 2 (Y) (Sonde 10:1)		Axe X TP1 Broche 3 (TRK.IN) Axe Y TP1 Broche 2 (TRK.ERR)	VR4 (TRK.GAN)	Déphasage 90°	• L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 7-7. • Dans le mode NORMAL, appuyer sur la touche de lecture (PLAY). Enclencher l'alimentation de l'oscillateur et fournir un signal de 1,2 kHz à 2 Vc-c. Note: (En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation.) • Ajuster le potentiomètre VR4 TRK GAN (gain de centrage de piste) de façon à ce que la figure de Lissajou sur l'oscilloscope devienne un cercle horizontal (déphasage 90°).  TP1 100kΩ (10:1) Broche 3 (TRK. IN) OSC 1,2kHz 2 Vc-c X Y Broche 4 (GND) Broche 2 (TRK. ERR) 39kΩ (10:1) 0,001 µF Fig. 7-7

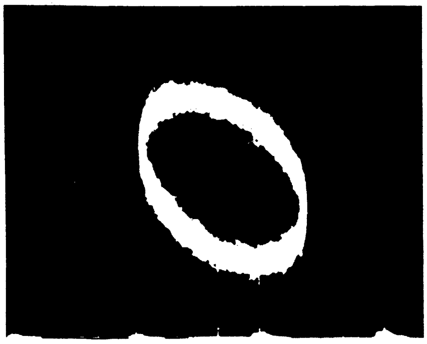


Photo 7-13 Gain élevé

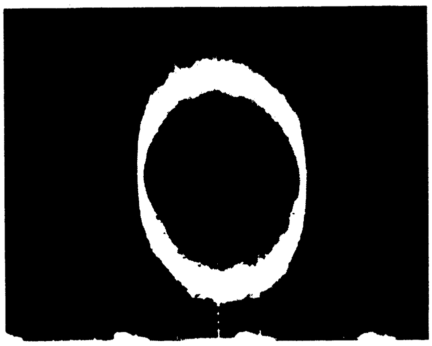


Photo 7-14 Gain optimum

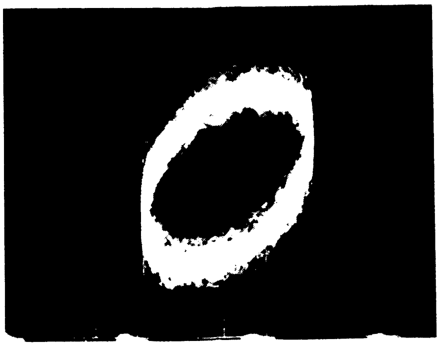
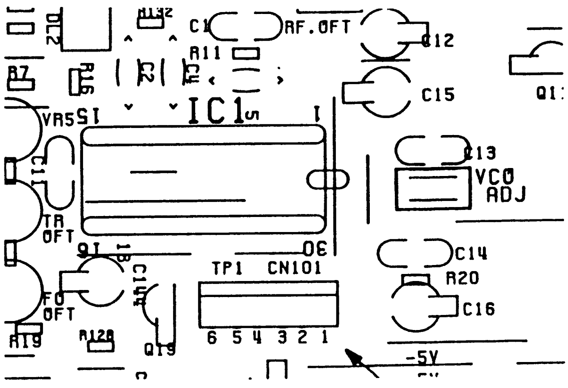
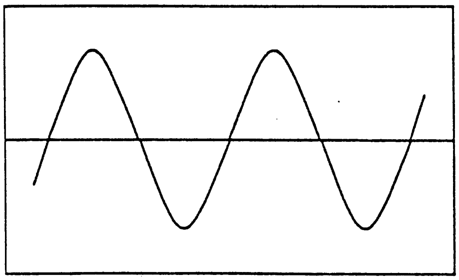


Photo 7-15 Gain réduit

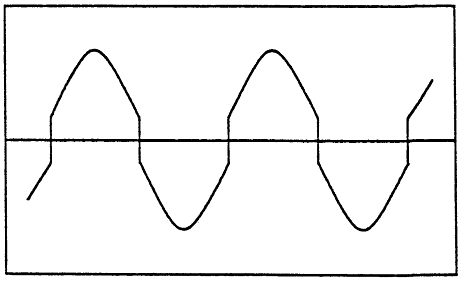
Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
10.	**RÉGLAGE DE LA FRÉQUENCE PROPRE DU VCO**					
			TP2 Broche 2	VR8 (VCO.ADJ)	4,275 ±0,025 MHz	• Régler le mode d'essai (TEST). (Voir page 45.) • Court-circuiter entre les ponts ASY et GND au moyen de l'outil de réseau, etc. (Figure 7-8) • Raccorder un fréquencemètre capable de mesurer au-dessus de 10 MHz à la broche 2 de TP2. • Ajuster le potentiomètre VR8 VCO ADJ (réglage du VCO) de façon à ce que la valeur indiquée par le fréquencemètre devienne égale à 4,275±0,025 MHz.  RF.OFT R11 C12 R7 C15 Q1 VR5 IC1 C13 VCO ADJ TR OFT C14 TP1 CN101 R20 FO OFT C16 R19 R128 Q13 6 5 4 3 2 1 -5V Fig. 7-8
11.	**MÉTHODE DE CONTRÔLE DE LA CARACTÉRISTIQUE S (ERREUR DE FOCALISATION)**					
						• Régler le mode d'essai (TEST). (Voir page 45.) • Réaliser un court-circuit entre la broche 5 FCS.IN (entrée de focalisation) de TP1 et la terre GND. • Appuyer sur la touche d'avance de piste (TRACK FWD) (⊳⊳I) et observer simultanément la forme d'onde à la broche 6 FCS.ERR (erreur de focalisation) de TP1 au moyen d'un oscilloscope.

N° de paso	Ajuste del oscilloscopio		Puntos deprueba	Putos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
12	**RÉGLAGE D'ENVELOPPE LINÉAIRE (AJUSTEMENT DE LA DISTORSION DE CROISSEMENT ZÉRO DU CONVERTISSEUR N/A)**					
	5mV/div	0.2msec/div	JA1 Borne LINE OUTPUT (canal gauche)			● Entrer en mode de lecture normale. ● Reproduire la piste 20 (− 60dB, 1kHz, canal gauche, canal droit du disque d'essai YEDS-7). Raccorderl' oscilloscope au canal gauche de la borne LINE OUTPUT (JA1) et observer la forme d'onde de la sortie audio.
				VR10	Onde sinusoidale	● Ajuster VR10 MSB (canal gauche) de sorte que l'onde sinusoidale apparaisse surr l'oscilloscope.
			JA1 Borne LINE OUTPUT (canal droit)	VR9	Onde sinusoidale	● Ajuster VR9 (canal droit) de la même manière.

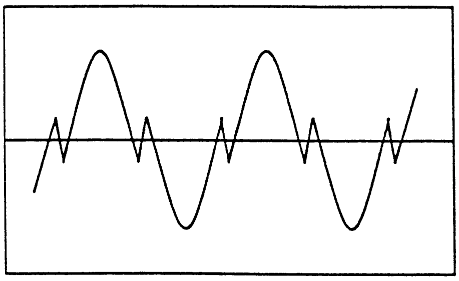
- **Forme d'onde de la distorsion de croisement zéro**



OK



NG



NG

7. AJUSTE

Los items de ajuste de este modelo deberán ser efectuados en el orden mostrado abajo.

• Itemes de ajuste y comprobación

1. Ajuste de desviación de seguimiento, foco y RF.
2. Ajuste del nivel de RF
3. Confirmación de la alimentación de salida de LD (diodo láser)
4. Confirmación de enclavamiento del enfoque y del eje
5. Ajuste del retículo
6. Ajuste del equilibrio de seguimiento
7. Ajuste tangencial
8. Ajuste de la ganancia de enfoque
9. Ajuste de la ganancia de seguimiento
10. Ajuste de la frecuencia propia de VCO
11. Método para confirmar el carácter S (error de enfoque)

• Equipo de medición

1. Osciloscopio de doble traza
2. Medidor de alimentación del láser
3. Disco de prueba (YEDS7)
4. Filtro de ajuste de equilibrio de seguimiento
5. Filtro de ajuste de ganancia de bucle
6. Generador de senñal
7. Contador de frecuencia
8. Otras herramientas generales

• Modo de prueba

Ajuste del modo de prueba y los procedimientos de cancelación

(1) Para disponer el mode de prueba, coloque en ON el interruptor POWER del reproductor (S401) mientras presiona el interruptor TEST MODE (S1). (terminales del modo de ajuste).

(2) Para cancelar el modo de prueba, simplemente gire el interruptor de POWER del reproductor a OFF.

Las varias funciones de tecla en el modo de prueba están enlistadas en la Tabla 7-1.

• Puntos de ajuste

VR1: Alimentación del láser
VR7: Desviación del seguimiento (TRK.OFS)
VR3: Ganancia de enfoque (FCS.GAN)
VR4: Ganancia de seguimiento (TRK.GAN)
VR5: Equilibrio de seguimiento (TRK.BAL)
VR6: Desviación de enfoque (FCS.OFS)
VR8: Ajuste de VCO
VR2: Compensación de RF (RF.OFS)
VR9 : Ajuste de MSB (canal izquierdo)
VR10 : Ajuste de MSB (canal derecho)

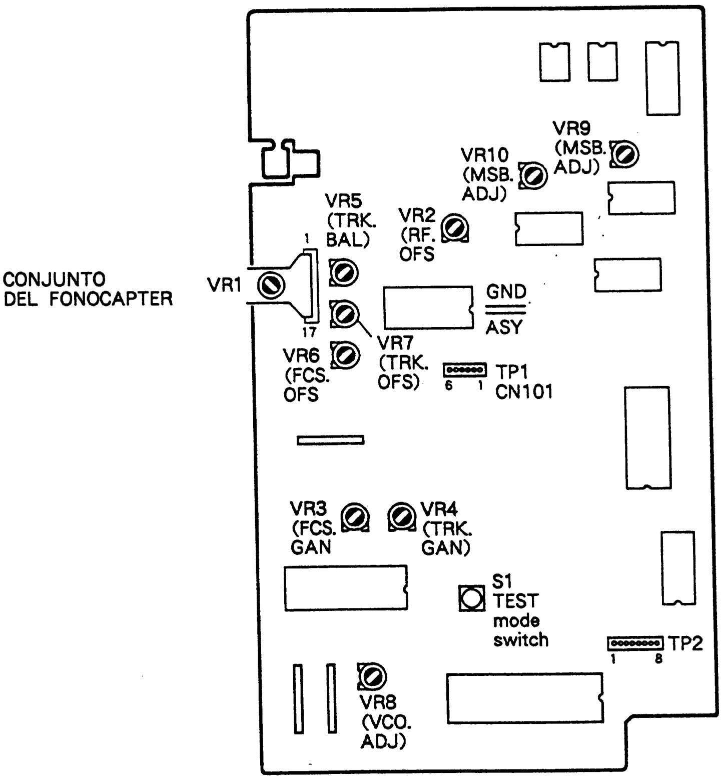


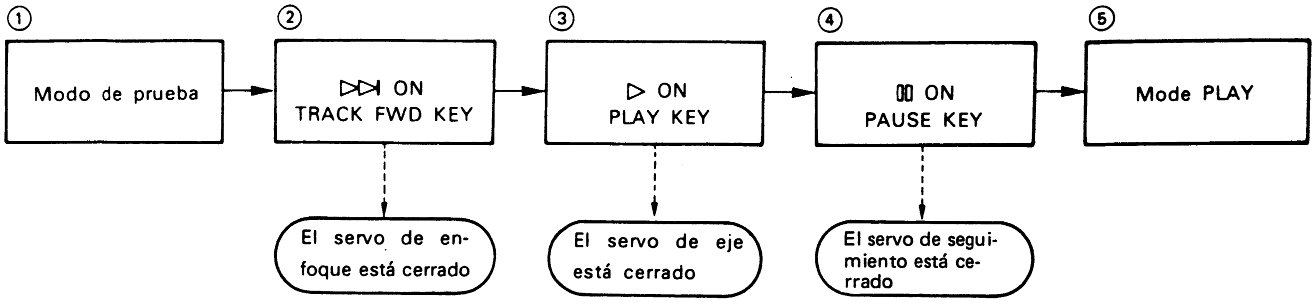
Fig. 7-1 Punto de ajuste

En el modo de prueba, cada servocircuito puede ser cerrado y abierto por operaciones separadas. Consecuentemente, cada servo deberá ser cerrado uno a la vez (en secuencia en serie) para ajustar el modo de PLAY (reproducción).

Fíjese que el modo de PLAY no se activa simplemente presionando la tecla de PAUSE (pausa) (⏸) en el modo de prueba.

Ejemplo: Conmutando del modo de STOP (parado) a PLAY.

* Cada servomecanismo funciona en una secuencia en serie en el modo de prueba.

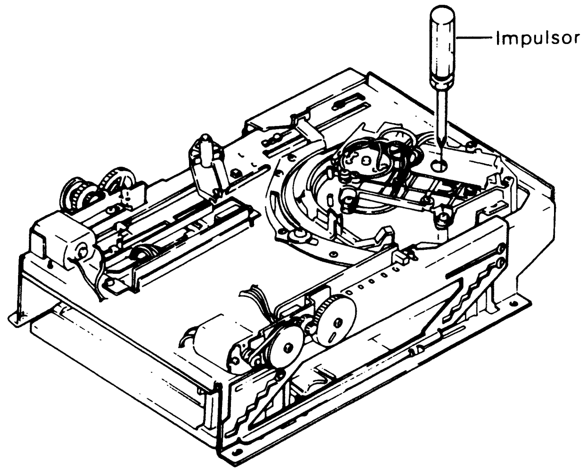
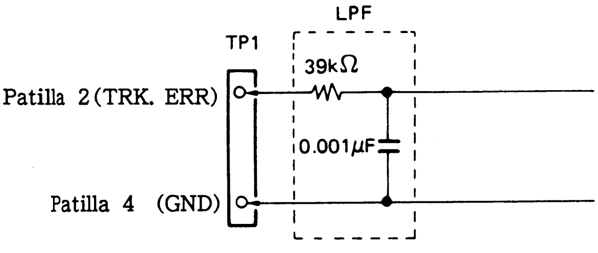

①
Modo de prueba
②
⏭ ON
TRACK FWD KEY
③
▷ ON
PLAY KEY
④
⏸ ON
PAUSE KEY
⑤
Mode PLAY
El servo de enfoque está cerrado
El servo de eje está cerrado
El servo de seguimiento está cerrado

• Funciones de tecla en el modo de prueba

Símbolo	Nombre de tecla	Función durante el modo de prueba	Descripció
⏭	TRACK FWD	El servo de enfoque está cerrado.	El diode láser se enciende. El actuador se mueve arriba/abajo, luego se cierra el servo de enfoque.
▷	PLAY	El servo de eje está cerrado.	El eje comienza a rotar y se cierra el servo cuando se convierte en el modo de servo CLV-A.
⏸	PAUSE	El servo de seguimiento está cerrado/abierto	Ejecuta la operatión de conexión oscilante. Cuando se cierra el servo de seguimiento y se pone en el modo de PLAY presionando esta tecla (el servo de enfoque y el del eje deberán estar cerrados), y el indicador de pausa se enciende. El servo de seguimiento se abre presionando de nuevo la tecla.
⏪	MANUAL SEARCH REV	El carro se mueve en la dirección inversa (hacia el centro del disco)	El carro se mueve hacia el centro del disco a una alta velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
⏩	MANUAL SEARCH FWD	El carro se mueve en la dirección hacia delante. (hacia el final del disco)	El carro se mueve hacia el final del disco a una alta velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
□	STOP	PARADO	Todos los servos están abiertos.
⏏	EJECT	(Cargador de discos compactos)	El cargador de discos compactos. Sin embargo, el captador no regresa a su posición de aparcamiento. Además, aun cuando se cierra el disco el captador permanece tal como está.

Tabla 7-1

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
1	AJUSTES DE COMPENSATION DE SEGUIMIENTO, FOCO Y RF					
						• Ajuste el modo de prueba. (Vea la página 57.)
				VR5 (TRK.BAL)	45°	• Gire el volumen de TRK.BAL (Equilibrio de seguimiento) de VR5 en el sentido de las manecillas del reloj 45°del centro.
			Patilla 2 de TP1 (TRK. ERR)	VR7 (TRK.OFS)	0V±50 mV	• Ajuste VR7 TRK.ERR (de seguimiento) de modo que el voltaje en TRK.ERR (desviación de seguimiento) de la patilla 2 de TP1 se ponga en 0V±50 mV.
			Patilla 6 de TP1 (FCS. ERR)	VR6 (FCS. OFS)	Compens. de foco 0V ± 50mV	• Ajuste VR6 FCS.OFS (compensación de foco) de modo que el voltaje de FCS.ERR (error de foco) en la patilla 6 de TP1 sea 0V ± 50mV.
			Patilla 1 de TP1 (RF OUTPUT)	VR2 (RF OFS)	Compens. de RF 100mV ± 50mV	• Ajuste VR2 RF.OFS (compensación de RF) de modo que el voltaje de salida de RF en la patilla 1 de TP1 sea 100 mV ± 50 mV.
2	AJUSTE DEL NIVEL DE RF					
			Patilla 1 de TP1 (RF)			• Ajuste el mode de TEST. (Vea la página 57.) • Reproduzca el disco de TEST y conecte la sonda de un osciloscopio a la RF de la patilla 1 (Salida de RF) de TP1 y mida el voltaje de P-P de la forma de onda de RF.
				Alimentación del laser VR1	1,8Vp-p ± 0,1V	• Ajuste UR1 (alimentación del láser) que el valor sea 1,8Vp-p ± 0,1V
3	CONFIRMACION DE ALIMENTACION DE ALIDA DE LD (DIODO LASER)					
						• Ajuste el modo de prueba. (Vea la página 57.) • Presione la tecla de TRACK FWD (▷▷|) y encienda el LD (Diodo láser).
					Confirmación Menos de 0,13 mW	• Ubique el sensor del medidor de potencia del láser inmediatamente arriba del objetivo, y confirme que la potencia de salida del LD sea menos de 0,13 mW.
4	CONFIRMACION DE BLOQUEO DE ENFOQUE Y DEL EJE					
						• Ajuste del disco de TEST. • Ajuste del mode de TEST. (Vea la página 57.) • Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). * Tenga en cuenta que este paso deberá ser ejecutado.
					Existe salida de RF	• Observe RF (Radio frecuencia) de la patilla 1 de TP1 con un osciloscopio y confirme que se saque la senñal de RF después de presionar la tecla de TRACK.ERR (▷▷|).
	0,5V/div	100 mseg/div	Patilla 1 de TP1 (Salida de RF)		Rotación normal	• Presione la tecla de PLAY (▷) y asegúrese que el disco rota en la dirección normal casi a la velocidad especificada (tal como está cerca del centro del disco, la velocidad de rotación es alrededor de 30 rpm) y que no rote anormalmente o inversamente.

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
5	**AJUSTE DE LA MIRA**					
	 Fig. 7-2  LPF TP1 39kΩ Patilla 2(TRK. ERR) 0.001μF Patilla 4 (GND) Fig. 7-3					• Ajuste el mode TEST. (Vea la página 57.) • Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (⊳⊳) de modo que el tornillo de ajuste de retículo del captador pueda ser visto a través del orificio oval en el lado superior del servomecanismo. • Inserte un impulsor de retículo en el orificio del lado superior or del mecanismo come se muestra en la Fig. 7-2, y confirme que gira el tornillo de retículo. • Presione la tecla de TRACK FWD (⊳⊳I) y la tecla de PLAY (⊳) secuencialmente y cierre el servo de enfoque y el del eje. (No cierre el servo de seguimiento.) • Observe la forma de onda en TRCK.ERR (Error de seguimiento) de la patilla 3 de TP1 con un osciloscopio. Luego inserte un filtro de paso bajo de corte. (Fig. 7-3)
	0,5 V/div	5 ms/div	TRK.ERR de la patilla 2 de TP1	Retículo	Punto cero Amplitud máxima	• Gire el impulsor de reticulo y encuentre el punto cero (Foto. 7-1) • Luego, gire lentamente el impulsor de retículo hacia **el seutido contrario del reloj** desde el punto cero y ajuste en el punto donde la forma de onda (Senñal de error de seguimiento) primeramente se ponga a una amplitud máxima. (Vea Foto 7-3) Nota: Si el impulsor de retículo se presiona fuertemente, el captador se mueve hacia el centro del disco, por consiguiente el ajuste resulta difícil. • Finalmente, asegúrese de confirmar que la señal de error de seguimiento (en este momento, no se ha insertado el filtro de paso bajo de corte de 4 kHz) cuando el captador se mueve hacia el centro del disco y el voltaje de P-P do la señal de error de seguimiento en la circunferencia exterior del disco no haya variado considerablemente. Cuando se desvía el nival arriba de ±10%, ajuste de nuevo girando el tornillo de retículo a un punto de amplitud de error mínimo.

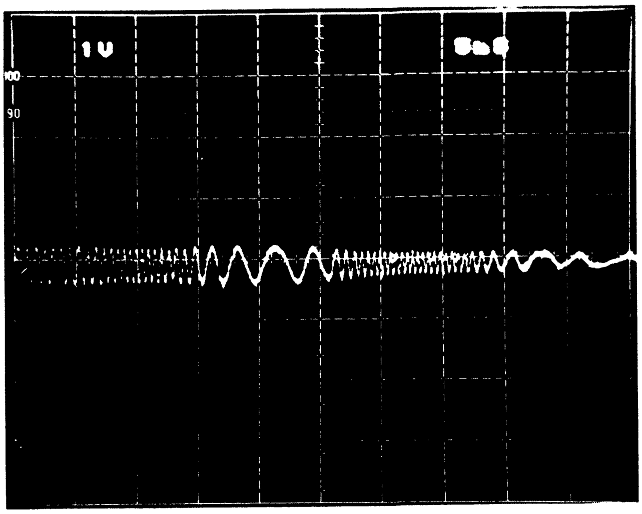


Foto 7-1 Punto cero

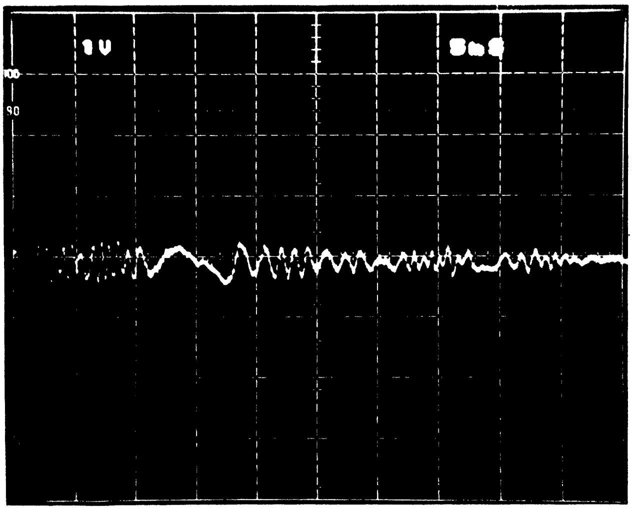


Foto 7-2 Forma de onda de un punto no cero

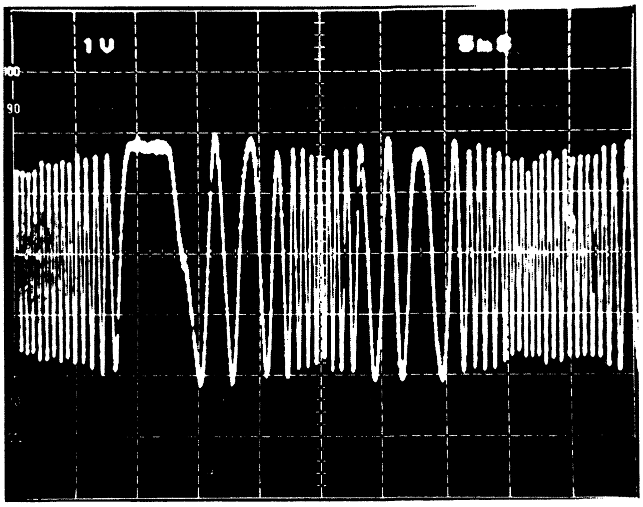


Foto 7-3 Amplitud máxima

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
6	**AJUSTE DE EQUILIBRIO DE SEGUIMIENTO**					
	0,5V/div	5 mseg /div	Patilla 2 de TP1 (TRK.ERR)	VR5 (TRK.BAL)	TRK.ERR	• Ajuste el disco de TEST. • Ajuste el mode de TEST. (Vea la página 57.) • Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). • Presione la tecla de TRACK FWD (▷▷⊣) y la tecla de PLAY (▷) para comenzar a voltear el disco. • Obseve TRK.ERR (Error de sequimiento) de la patilla 2 de TP1 con un osciloscopio y ajuste con el volumen de TRK.BAL (Equilibrio de seguimiento) de VR5 de modo que la componente de CC del error de seguimiento desaparezca. Note :Avant de procéder aux ajustments ci-dessus, veiller arégler le dé calage d'erreur de piste.

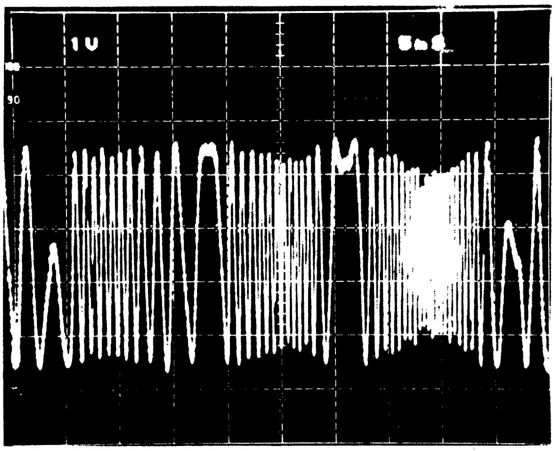


Foto 7-4 Existe componente de CC

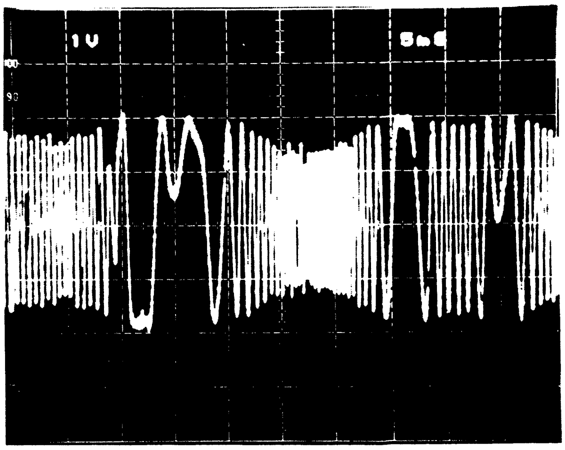
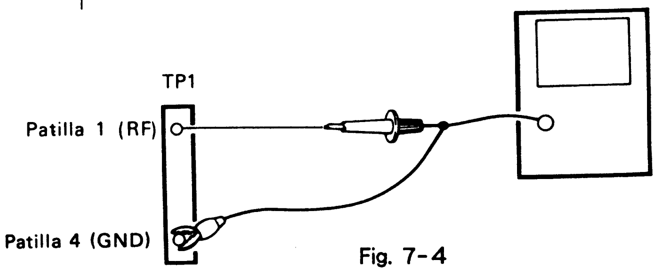
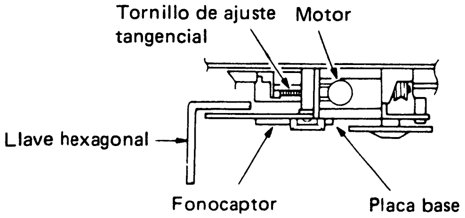


Foto 7-5 No existe componente de CC

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
7	**AJUSTE TANGENCIAL**					
		200 nS	Patilla 1 de TP1 (Salida de RF)	Tornillo de ajuste de la tangencial	Mejor imagen de prueba	• Ajuste el disco de TEST. • Ajuste el mode de TEST. (Vea la página 57.) • Cambie el carro cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). • Presione la tecla de TRAK FWD (▷▷|), la tecla de PLAY (▷) y la tecla de PAUSE (▯▯) secuencialmente, y cierre todos los servos. (El indicador de pausa se enciende.) • Observe el RF de la patilla 1 (Salida de RF) de TP1 con un osciloscopio y ajuste con el tornillo de la tangencial de modo que la imagen de prueba resulte nítida. (Fig. 7-4) • El punto de ajuste es el punto medio entre el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en el sentido de las manecillas del reloj, y el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en contra del sentido de las manecillas del reloj. Como un criterio, observe que la forma de onda en conjunto sea nítida y que una de las figuras de diamante esté dentro de la imagen de prueba (Foto.7-6), y ajuste al punto óptimo donde la forma de diamante se vea relativamente como una línea fina.  Fig. 7-4 (Nota) Durante el ajuste, sostenga la llave hexagonal hacia arriba para evitar que el cuerpo del captador vaya hacia abajo.


Tornillo de ajuste tangencial
Motor
Llave hexagonal
Fonocaptor
Placa base

En la figura siguiente, las partes superior e inferior son opuestas a las del producto real.

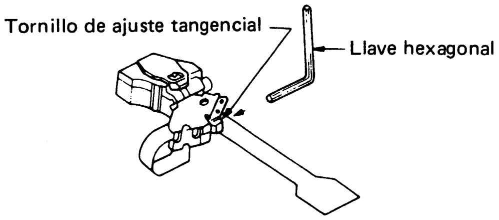

Tornillo de ajuste tangencial
Llave hexagonal

Fig. 7-5 Ajuste tangencial

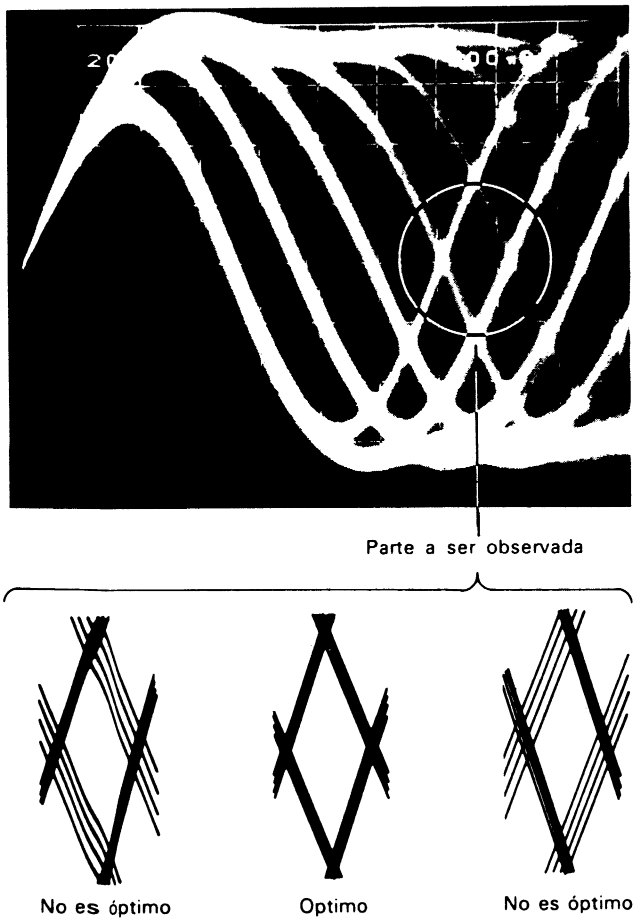

Parte a ser observada
No es óptimo
Optimo
No es óptimo

Foto 7-6

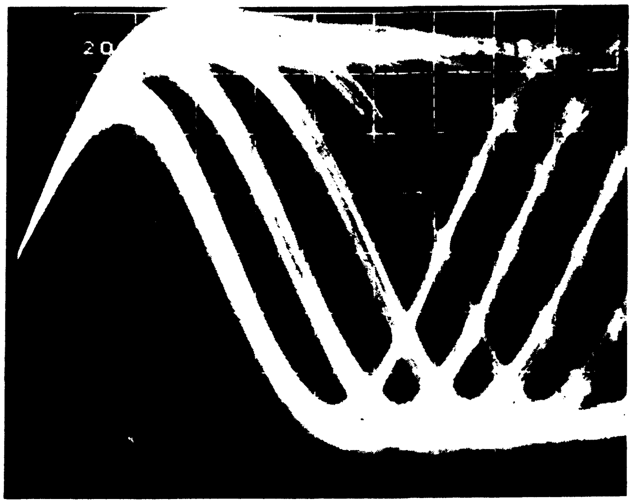


Foto 7-7

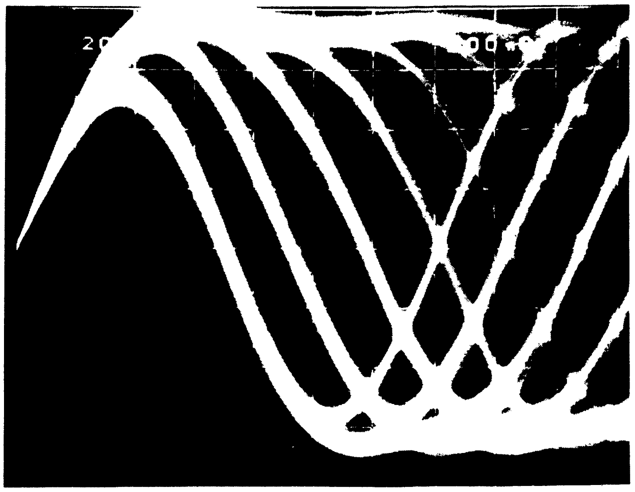


Foto 7-8

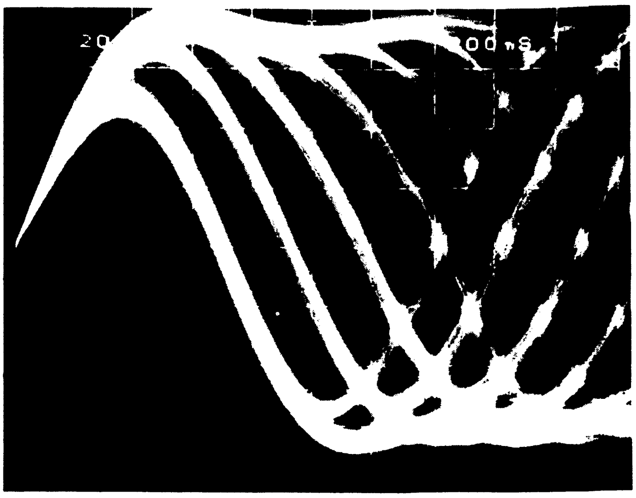
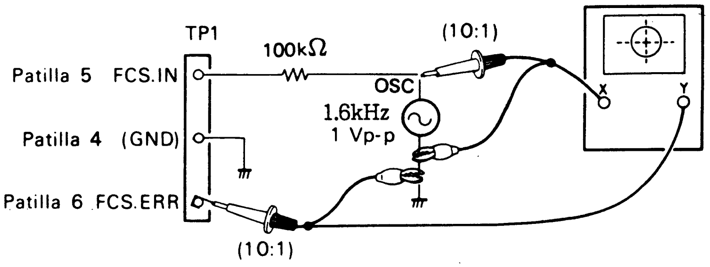


Foto 7-9

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
8	**AJUSTE DE GANANCIA DE ENFOQUE**					
	20 mV/div.5/mV/div. CH1 (X), CH2 (Y) (SONDA 10:1)		Eje X Patilla 5 de TP1 (FCS.IN) Eje Y Patilla 6 de TP1 (FCS.ERR)	VR3 (GANACIA FCS)	Diferencia de fase 90°	• En el estado de POWER OFF (apagado), conecte el osciloscopio y el oscilador como se muestra en la Fig.7-6. • En el mode de NORMAL, presione la tecla de PLAY. • Encienda el oscilador y extraiga 1.6kHz 1 Vp-p. Nota: (Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por lo tanto, es conveniente conectar el oscilador después del encendido.) • Ajuste con el volumen de FCS.GAN (Ganancia de enfoque) de VR3 de modo que la figura de Lissajous del oscilloscopio a ser un círculo horizontal (90° de diferencia de fase).  TP1 100kΩ (10:1) Patilla 5 FCS.IN OSC 1.6kHz 1 Vp-p X Y Patilla 4 (GND) Patilla 6 FCS.ERR (10:1) Fig. 7-6

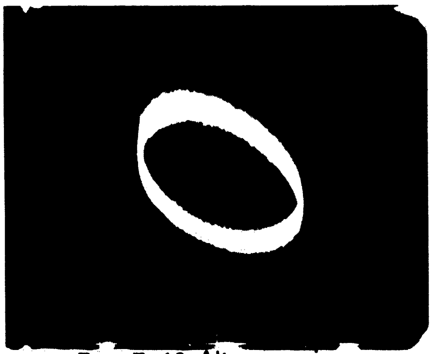


Foto 7-10 Alta ganacia

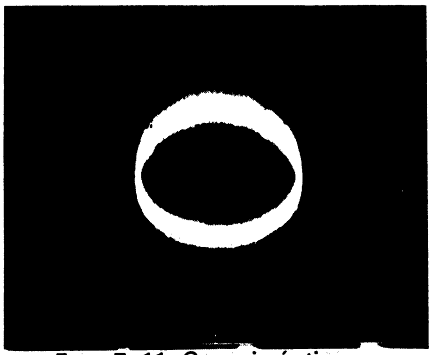


Foto 7-11 Ganacia óptima

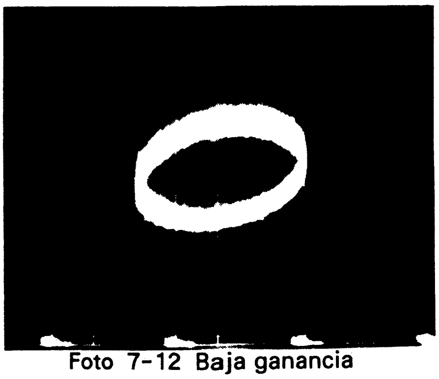
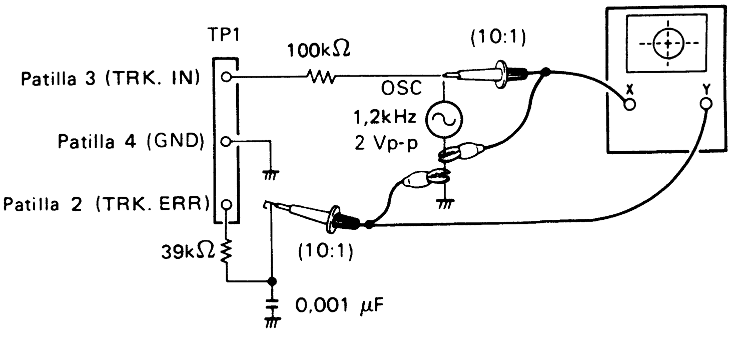


Foto 7-12 Baja ganancia

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
9	**AJUSTE DE GANANCIA DE SEGUIMIENTO**					
	50 mV/div. 5 mV/div. CN1 (X), CH2 (Y) (SONDA 10:1)		Eje X Patilla 3 de TP1 (TRK.ERR) Eje Y Patilla 2 de TP1 (TRK.ERR)	VR4 (TRK.GAN)	90° de diferencia	• En el estado de POWER OFF (apagado), conecte un osciloscopio y un oscilador como se muestra en la Fig. 7-7 • En el mode de NORMAL, presione la tecla de PLAY. • Encienda el oscilador y extraiga 1,2 kHz 1 Vp-p. Nota: (Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por la tanto, es conveniente conectar el oscilador después del encendido.) • Ajuste con el volumen de TRAK GAN de VR4 (Ganancia de seguimiento) de modo que la figura de Lissajous del osciloscopio llege a ser un círculo horizontal (90° de diferencia de fase).  TP1 100kΩ (10:1) Patilla 3 (TRK. IN) OSC 1,2kHz 2 Vp-p X Y Patilla 4 (GND) Patilla 2 (TRK. ERR) 39kΩ (10:1) 0,001 μF Fig. 7-7

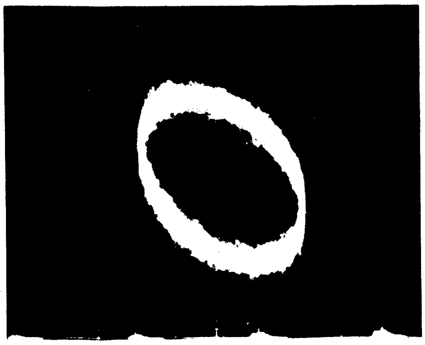


Foto 7-13 Alta ganacia

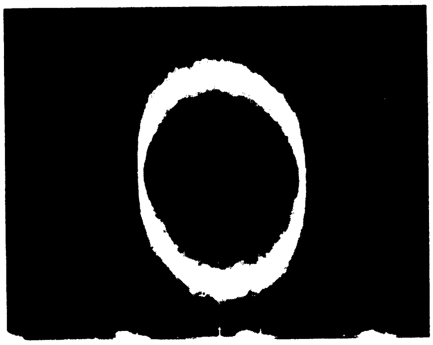


Foto 7-14 Ganancia óptima

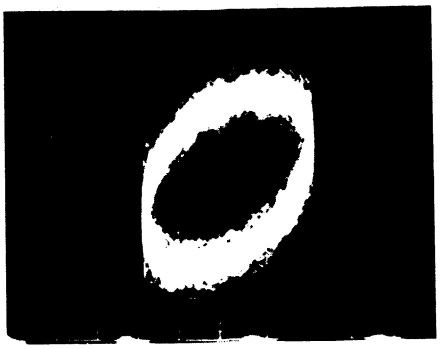
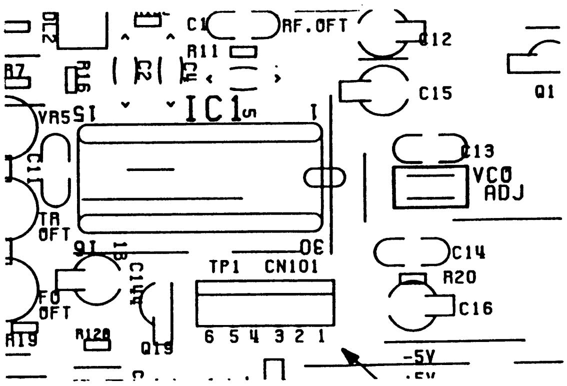
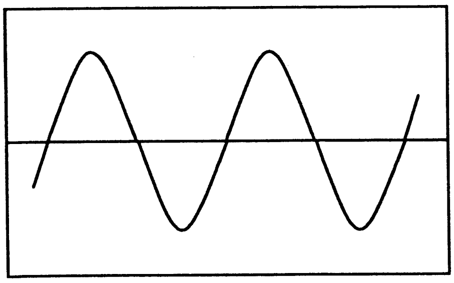


Foto 7-15 Baja ganancia

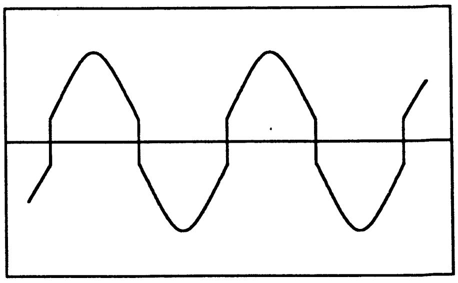
No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
10	**AJUSTE DE LA FRECUENCIA PROPIA DE VCO**					
			Patilla 2 de TP2	VR8 (VCO.ADJ)	4,275 ±0,025 MHz	• Ajuste el modo de TEST. (Vea la página 57.) • Haga un cortocircuito entre ASY y la conexión volante de GND con impulsor de retículo, etc. (Fig. 7-8) • Conecte el frecuencímetro, que pueda medir arriba de 10 MHz, a la patilla 2 de TP2. • Ajuste con el volumen VCO ADJ (ajuste de VCO) de VR8 de modo que el valor del frecuencímetro se ponga en 4,275 ±0,025 MHz.  C1 RF.OFT C12 R11 R7 VR5 S1 IC1 C15 Q1 C13 VCO ADJ TR OFT FO OFT C14 R20 C16 TP1 CN101 6 5 4 3 2 1 -5V R19 Fig. 7-8
11	**METODO PARA CONFIRMAR EL CARACTER S (ERROR DE ENFOQUE)**					
						• Ajuste el modo de TEST. (Vea la página 57.) • Haga un cortocircuito entre FCS.IN (Entrada de enfoque) de la patilla 5 de TP1 y GND. • Presione la tecla de TRACK FWD (⏭) y observe la forma de onda de FCS.ERR (Error de enfoque) de la patilla 6 de TP1 con un osciloscopio.

N° d' étape	Réglage d'oscilloscope		Points d'essai	Points de réglage	Postes de controloe/ Specifications de r églage	Procédure de réglage
	V	H				
12	AJUSTE DE LA ENVOLVENTE LINEAL (AJUSTE DE LA DISTÓRSION DEL PUNTO DE INTERSECCIÓN DEL EJE CON CERO DEL CONVERTIDOR D/A)					
	5mV/div	0.2msec/ div	JA1 terminal LINE OUTPUT (canal derecho)			● Entre en el modo de reproducción normal. ● Reproduzca la canción 20 (−60 dB, 1kHz, canales izquierdo y derecho) del disco de prueba (YEDS-7). Conecte el osciloscopio a el canal derecho del terminal LINE OUTPUT (JA1), y observe la forma de onde de salida de audio.
				VR10	Onda senoidal	● Ajuste VR10 MSB (canal derecho) hasta obtener una forma de onda senoidal en el osciloscopio.
			JA1 terminal LINE OUTPUT (canal izquierdo)	VR9	Onda senoidal	● Ajuste VR9 (canal izquierdo) de la misma forma.

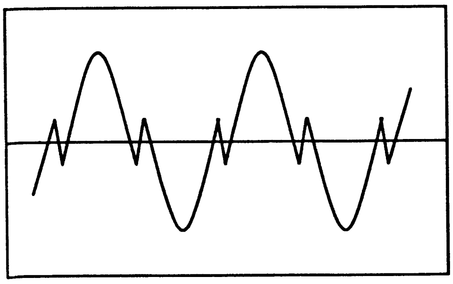
● Forma de onda de la distorsion del punto de intersección del eje con cero



OK



NG



NG

12. PANEL FACILITIES

FRONT PANEL

INDICATORS

DISC : The disc being played or searched for is displayed.

TRACK : The number of the track or program currently playing is displayed.

REPEAT : Lights during repeat playback.

RANDOM : Lights during random playback.

TIME/REMAIN/TOTAL : Each time the TIME key is pressed, the display changes accordingly.

- TIME : Displays the number and playing time of the track being played.
- REMAIN : Normally, the number (TRACK) of the track being played is displayed. During playback, the remaining playback time (TRACK REMAIN) of the track being played is displayed (in minutes and seconds). Pressing the key once will display (in minutes and seconds) the remaining playback time (DISC REMAIN) of the disc being played.
- TOTAL : This displays the total number of tracks (TRACK) on the disc and the disc's total playing time in minutes and seconds.

For programmed playback, the remaining time of the track being played and the total playback time (TOTAL) of the program are displayed.

MIN : Displays the minutes of the playback time and remain time of the currently-playing track or disc.

SEC : Displays the seconds of the playback time and remain time of a track.

PROGRAM : Lights when a program has been entered.

DELETE : Lights when delete has been set.

IN : Lights during fade-in.

OUT : Lights during fade-out.

TIME FADE : Lights when time fade editing has been set.

LEVEL MEMORY : Lights when the ATT level is stored in memory.

INDEX : Displays the index[*1] number of a designated section in a track.

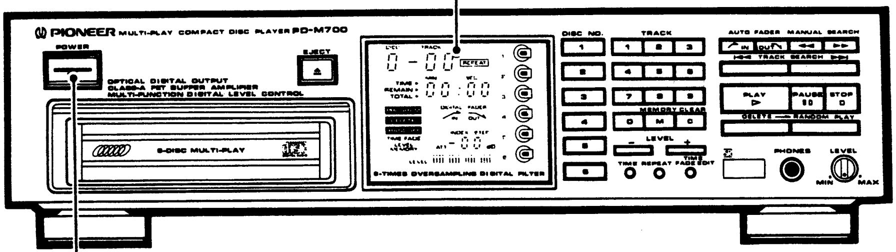
STEP : Displays the program step number during programming.

ATT : Displays the decreasing output level (in -dB) during fade-in, fade-out, digital level control, and ATT level memory.

LEVEL : Displays the output level of the digital level controller.

DISC Symbol (◉) : The center bar of the disc symbol for the disc being played lights in red. When searching for discs not installed in the magazine, the corresponding disc mark will go off.

[*1] An INDEX (pre-recorded in the track) is the number of a section in a track.
Discs pre-recorded with index numbers are indicated as such by the INDEX mark shown in the disc's pamphlet.


PIONEER MULTI-PLAY COMPACT DISC PLAYER PD-M700
POWER
EJECT
OPTICAL DIGITAL OUTPUT
CLASS-A FET BUFFER AMPLIFIER
MULTI-FUNCTION DIGITAL LEVEL CONTROL
6-DISC MULTI-PLAY
TRACK
REPEAT
TIME
REMAIN
TOTAL
MIN
SEC
DIGITAL FADER
IN
OUT
TIME FADE
LEVEL MEMORY
INDEX
STEP
ATT
dB
LEVEL
8-TIMES OVERSAMPLING DIGITAL FILTER
DISC NO.
1
2
3
4
5
6
TRACK
1
2
3
4
5
6
7
8
9
0
M
C
MEMORY CLEAR
LEVEL
−
+
TIME
REPEAT
TIME FADE EDIT
AUTO FADER
MANUAL SEARCH
IN
OUT
TRACK SEARCH
PLAY
PAUSE
STOP
DELETE
RANDOM PLAY
PHONES
LEVEL
MIN
MAX

POWER switch

Press to turn power to the unit ON and OFF.

TRACK NO. keys (TRACK NUMBER 1 - 0)
Use to select track numbers (track 1 - track 99) for playback or programming.

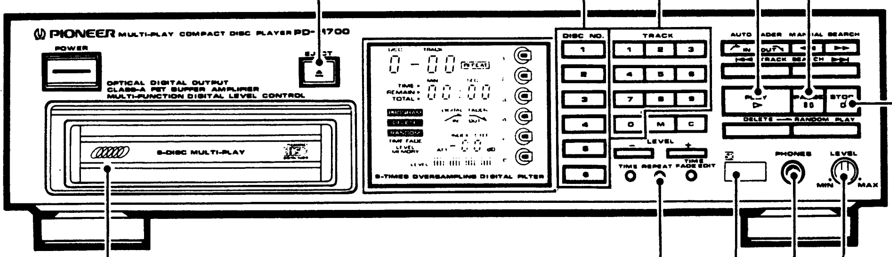
DISC NO. keys (DISC NUMBER 1 - 6)
Use to select disc numbers for playback or programming.

EJECT key
Press to eject a magazine or the disc tray. When pressed, any magazine (in case of single magazine, the disc tray) inside is expelled forward.

PLAY key and indicator
Press to begin playback, and to release the player from the pause mode.

PAUSE key and indicator
Press to temporarily interrupt playback. When pressed again, the player is released from the pause mode.

STOP key
Press to stop playback. When pressed, the player stops all operations.


PIONEER MULTI-PLAY COMPACT DISC PLAYER PD-M700
POWER
EJECT
OPTICAL DIGITAL OUTPUT
CLASS-A FET BUFFER AMPLIFIER
MULTI-FUNCTION DIGITAL LEVEL CONTROL
6-DISC MULTI-PLAY
DISC
TRACK
REPEAT
TIME
REMAIN
TOTAL
PROGRAM
DELETE
RANDOM
TIME FADE
LEVEL MEMORY
DIGITAL FADER
IN
OUT
dB
LEVEL
8-TIMES OVERSAMPLING DIGITAL FILTER
DISC NO.
1
2
3
4
5
6
TRACK
1
2
3
4
5
6
7
8
9
0
M
C
LEVEL
−
+
TIME
REPEAT
TIME FADE EDIT
AUTO FADER
IN
OUT
MANUAL SEARCH
TRACK SEARCH
PLAY
PAUSE
STOP
DELETE
RANDOM PLAY
PHONES
LEVEL
MIN
MAX

Magazine insertion slot

PHONES LEVEL control knob
Use to adjust the level of sound when using headphones. Turning the knob to the right increases the sound level.

REPEAT key
Press to perform repeat playback
- If pressed during normal playback mode, all tracks on all the discs will be played back repeatedly.
- If pressed during programmed playback, the programmed tracks will be repeatedly played back in the programmed order.
- When all the tracks have been played at random during random play, the same tracks will be played again in a new random order.
- During delete random playback, tracks not specified are played at random. After all the unspecified tracks are played, delete random playback will repeat.

PHONES (headphones) jack
When you wish to use headphones, insert the plug for the headphones into the headphones jack.

REMOTE SENSOR

TRACK SEARCH keys

When the player is in the normal playback, programmed playback or pause modes, these keys are pressed to search for a desired track. Pressing either key causes the player to advance to the next track, or return to the previous track.

[►►|] : When pressed once, play restarts at the beginning of the next track on the disc; when pressed continuously, the disc playback shifts to the beginning of succeeding tracks on the disc. (During programmed playback, it moves to the beginning of the next programmed track.)

[|◄◄] : When pressed once, the disc playback returns to the beginning of the currently playing track; when pressed continuously, the disc playback shifts to the beginning of previous tracks on the disc. (During programmed playback it returns to the beginning of the previously programmed track.)

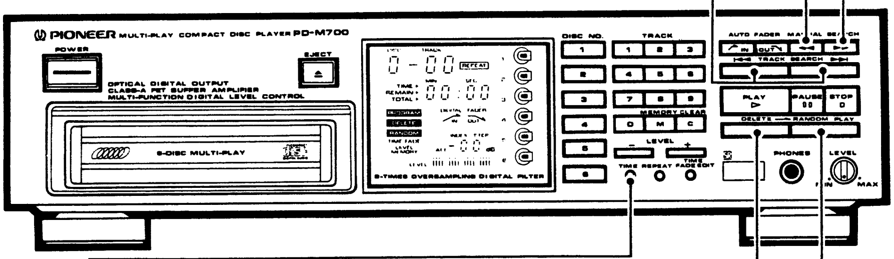
MANUAL SEARCH keys

When the player is in play or pause modes, these keys are pressed to perform fast forward or fast reverse operations, to allow manual searching. These operations are only carried out during the time either key is pressed.

[►►] : Fast forward operation (If fast forward operation is performed to the end of the disc, "End" will be indicated and the player will enter pause mode)

[◄◄] : Fast reverse operation (If fast reverse operation is performed to the beginning of the disc, the player will enter play mode.)

If these operations are performed during programmed play mode, the player will enter pause mode (or play mode) just before transferring to the next (or previous) step.


PIONEER MULTI-PLAY COMPACT DISC PLAYER PD-M700
POWER
EJECT
OPTICAL DIGITAL OUTPUT
CLASS-A FET BUFFER AMPLIFIER
MULTI-FUNCTION DIGITAL LEVEL CONTROL
6-DISC MULTI-PLAY
REPEAT
TIME
REMAIN
TOTAL
PROGRAM
DELETE
RANDOM
8-TIMES OVERSAMPLING DIGITAL FILTER
DISC NO.
TRACK
MEMORY CLEAR
LEVEL
TIME
REPEAT
TIME FADE EDIT
AUTO FADER
IN
OUT
MANUAL SEARCH
TRACK SEARCH
PLAY
PAUSE
STOP
DELETE
RANDOM PLAY
PHONES
LEVEL
MIN
MAX

TIME key

- Use to select the method for displaying the playing time on the indicator panel.
  Each time the key is pressed, the indication changes from TIME, REMAIN (track remain) and REMAIN (disc remain: This will not be displayed during programmed playback.) to TOTAL in that order. (For details concerning the display contents, refer to the explanation about the indicators.)
- When pressed after a track is specified with the track no. keys during playback, it will display the total playback time of the specified track of the disc currently playing.

RANDOM PLAY key

Press this key to start random playback or delete random playback.

DELETE key

Press this key to specify the undesired tracks for delete random play.

CLEAR key
Press this key to clear the program and the time fade editing.

MEMORY key (MEMORY)
Use to program a sequence of tracks.

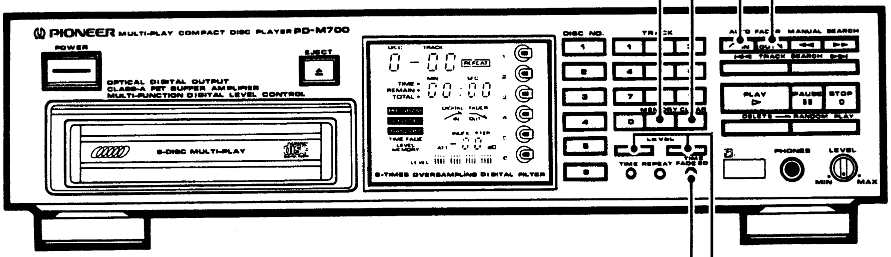
- Press this key after selecting a desired disc and track with disc and TRACK NO. keys. Tunes will be added to the program in the order in which they are specified.
- If only a DISC NO. key is pressed, all tracks on the specified disc will be added to the program. The letters "AL" will appear on the indicator.

This is used when the playback volume level is to be stored in memory.

- After specifying the desired disc number and playback volume level with the disc number keys and level keys, press this key. The disc number and playback volume level will be stored in memory.

AUTO FADER IN ↗ key
Press this key to begin playback with fade-in. (Operable only during pause mode.)

AUTO FADER OUT ↘ key
Press to begin fade-out. (When fade-out ends, the player will enter pause mode.)


PIONEER MULTI-PLAY COMPACT DISC PLAYER PD-M700
POWER
EJECT
OPTICAL DIGITAL OUTPUT
DISC NO.
TRACK
MANUAL SEARCH
TRACK SEARCH
PLAY
PAUSE
STOP
RANDOM PLAY
LEVEL
PHONES
MIN
MAX
8-TIMES OVERSAMPLING DIGITAL FILTER

TIME FADE EDIT key
Press to have a fade-out when playback reaches the end of the specified time.

LEVEL keys
The sound volume can be reduced in 1 dB steps from 0 dB to –25 dB. When the power is turned on, the volume will be set to the preset level. (The initial setting is 0 dB.)
It can also be used to store the playback volume level in memory for each disc.

Audio glossary

Fade-in	: This is when the sound becomes audible gradually.
Fade-out	: This is when the sound gradually becomes inaudible.

NOTE:
The digital output terminal cannot perform fade-in, fade-out, and digital level control and ATT level memory playback.

REMOTE CONTROL UNIT

Refer player front panel section regarding other key functions not specified here.

The remote control unit is turned on by pressing any of its keys. It will stay on (POWER ON) for about 60 seconds, after which it will turn off (POWER OFF) automatically.

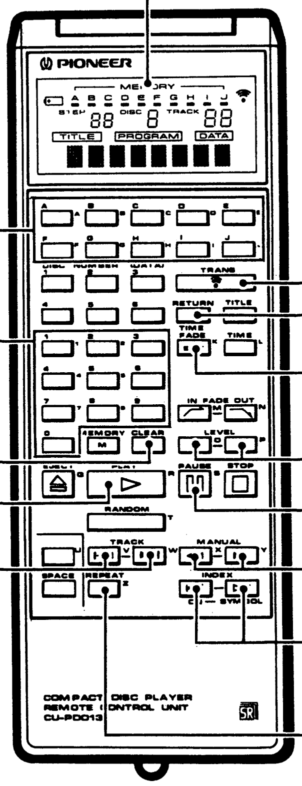
INDICATORS

MEMORY(A - J)	Displays the memory key that was pressed. (Except when entering a program, A to J will all light. The lower indicator will light only for the program or data stored in memory.)
📶	This symbol will flash when the remote control unit sends signals to the player.
🔋	This symbol is usually lit. When the batteries are run down, it starts to flash to indicate that the batteries should be changed.
STEP	Indicates programming STEP.
DISC	Indicates disc number.
TRACK	Indicates track number.
DATA	Lights when data is input.
PROGRAM	Indicates when program is entered.
TITLE	Lights when the title is input.
████████	An eight-character dot display displays numbers and characters. During normal use, the name (or abbreviation) of the key pressed is displayed. The title or data for each memory is displayed.

MEMORY keys
This key is used to call up memories A to J.
Programs can be stored to ten types of memory, from A to J. Thus, programs for up to ten disc magazines (a total of 256 program steps) can be stored for long periods with the remote control unit. Also, for each memory (magazine), a title of up to eight characters can be stored.

Transmission key (TRANS)
Use when transmitting programs in memories A to J to memory in player.

RETURN key
Press to return to the initial display.


PIONEER
MEMORY
A B C D E F G H I J
STEP
DISC
TRACK
TITLE
PROGRAM
DATA
DISC NUMBER (DATA)
TRANS
RETURN
TITLE
TIME FADE
TIME
IN FADE OUT
MEMORY
CLEAR
LEVEL
EJECT
PLAY
PAUSE
STOP
RANDOM
TRACK
MANUAL
SPACE
REPEAT
INDEX
CH — SYMBOL
COMPACT DISC PLAYER
REMOTE CONTROL UNIT
CU-PD013
SR

TRACK NUMBER keys

CLEAR key

PLAY key

TRACK SEARCH keys

TIME FADE EDIT key

LEVEL Control keys

PAUSE key

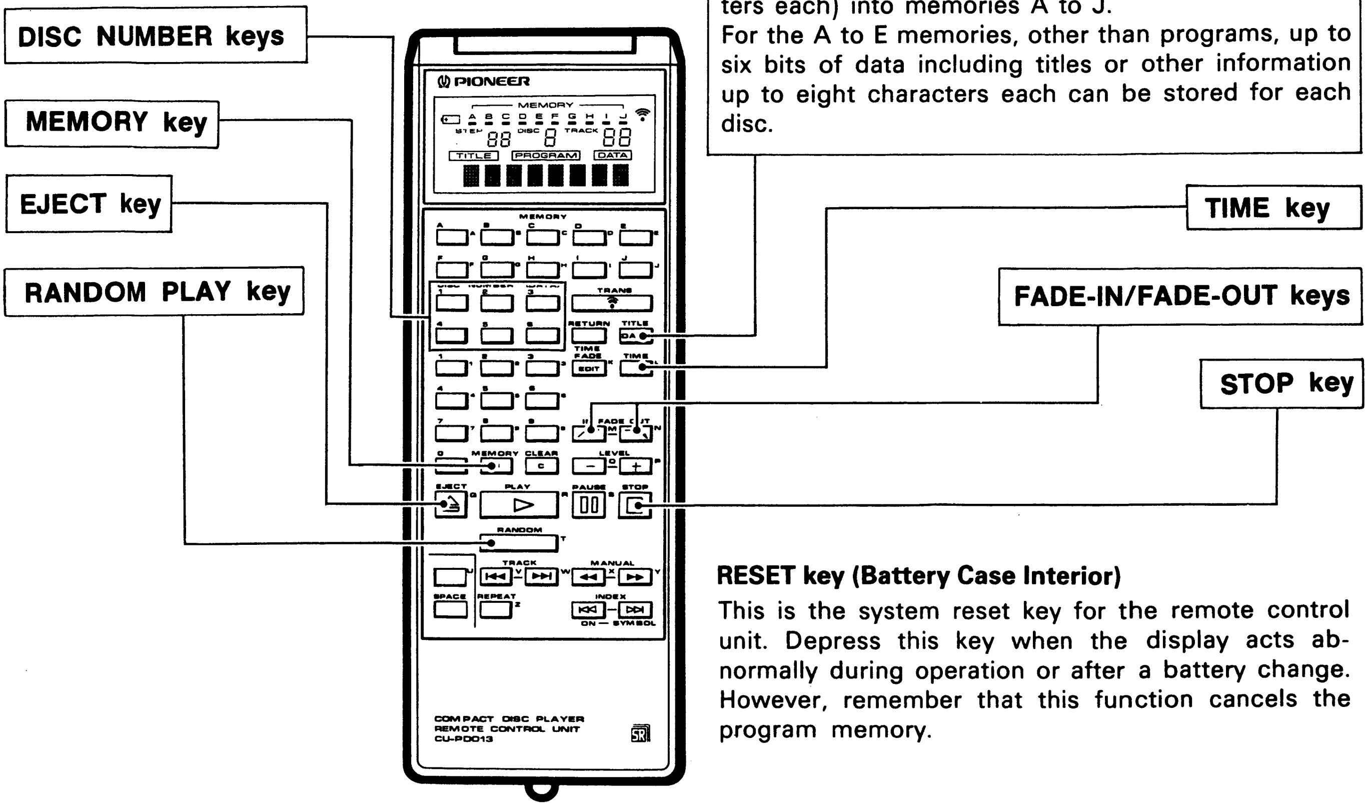
MANUAL SEARCH keys

INDEX SEARCH keys

REPEAT key

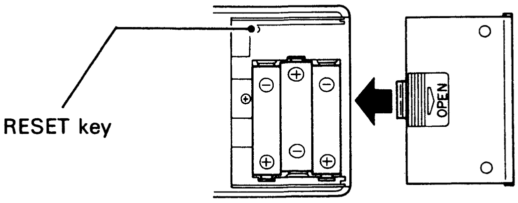
TITLE/DATA key

Press this key to store titles (of up to eight characters each) into memories A to J.
For the A to E memories, other than programs, up to six bits of data including titles or other information up to eight characters each can be stored for each disc.


DISC NUMBER keys
MEMORY key
EJECT key
RANDOM PLAY key
TIME key
FADE-IN/FADE-OUT keys
STOP key
PIONEER
MEMORY
TITLE
PROGRAM
DATA
COMPACT DISC PLAYER
REMOTE CONTROL UNIT
CU-PD013

RESET key (Battery Case Interior)

This is the system reset key for the remote control unit. Depress this key when the display acts abnormally during operation or after a battery change. However, remember that this function cancels the program memory.


RESET key
OPEN

Character displays for the keys pressed during normal use.

Key operations	Character display	Key operations	Character display
PLAY ▷	PLAY	INDEX ⏭	INDEX >
LEVEL +	LEVEL +	INDEX ⏮	< INDEX
LEVEL −	− LEVEL	TIME	TIME
PAUSE ⏸	PAUSE	REPEAT	REPEAT
STOP □	STOP	RANDOM	RANDOM
EJECT ⏏	EJECT	FADE OUT ⟍	FADE OUT
TRACK ⏭	TRACK >	FADE IN ⟋	FADE IN
TRACK ⏮	< TRACK	TIME FADE EDIT	T. FADE
MANUAL ⏩	MANUAL>	MEMORY M	PROGRAM
MAUAL ⏪	<MANUAL	CLEAR C	CLEAR

REAR PANEL

DIGITAL OUT switch
This is switched on when the digital output terminal is used.
ON : When a coaxial or optical digital terminal is used.
OFF : When only a line output terminal is used.

SUBCODE OUT terminal (U.S. model only)
This terminal will be used to output subcodes (data recordable on compact discs together with audio signals) in future audio applications.

LINE OUT terminals

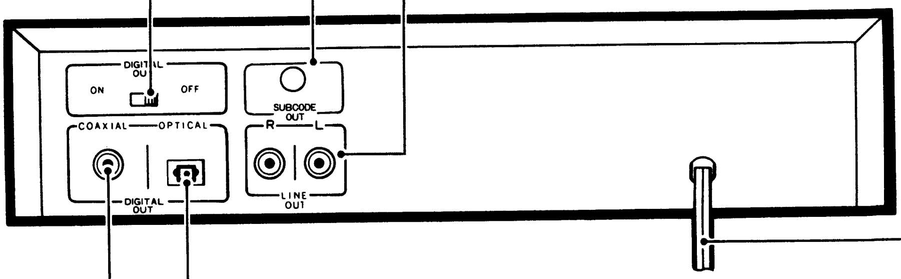


Illustration not applicable to U.K. model.

POWER CORD

Coaxial digital output terminal
This terminal allows output of disc audio data and subcode (signals which can be recorded together with the audio signal) as digital signals.

Optical digital output terminal
This terminal allows optical output of disc audio data and subcode (signal which can be recorded with the audio signal) as digital signals.

- The coaxial cable and optical fiber cable are sold separately.